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ORAL ARITHMETIC

BY GRADES

BOOK ONE

DESIGNED FOR THE USE OF CLASSES IN THE SECOND,
THIRD, AND FOURTH YEARS OF THE
PUBLIC SCHOOL COURSE

BY

ALFRED KIRK

AND

A. R. SABIN

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PREFACE.

FOR the presentation to the public of a new work on Oral Arithmetic, no apology is needed—no apology is offered. The recognized importance of the subject as a disciplinary study, and its value in the practical computations of every-day life and as a preparation for an intelligent apprehension of the higher phases of mathematics, are ample justification for submitting this work for public use. This work is prepared in two parts, Books No. 1 and No. 2, and is offered confidently to the favorable judgment of teachers, who are conscious of the obvious fact that not all that is desirable, or even possible, is being gained from the study of Arithmetic in the schools of to-day.

The study of the underlying principles, and the reciprocal relations of like quantities as expressed in numbers, is seemingly ignored to the extent that this department of mathematics has lost its virility. No thought power is gained, nor is there acquired an ability to reason to legitimate conclusions. It is believed that the time has come to call a halt along these lines, to readjust our forces, and to substitute more intelligent methods of procedure

and more rational modes of discussion, based upon the central underlying principle of the *relations of quantities*.

Arithmetic is but the science of the relation of quantities as expressed by number. To know, for instance, that 3 apples and 4 apples equal 7 apples is to know that 7 apples less 4 apples equals 3 apples; and to know that A's money equals $\frac{1}{2}$ of B's money is to know that other relation that B's money equals twice as much as A's; and further to know that C's equals $\frac{2}{3}$ of D's is to know that D's equals $\frac{3}{2}$ of C's.

This, it is believed, will be found to be the distinguishing feature of the work, and upon this feature its claim for indorsement is submitted. It is the outgrowth of years of study and trial in the class-room,—the crucial test of every work of this kind,—and is sent forth to seek favor in other class-rooms.

SECOND GRADE.

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LESSON I.

1. A boy spent 2 cents for paper and 2 cents for pens. How much did he spend for both ?
2. A girl paid 4 cents for a ball and 2 cents less for needles. How much did she pay for the needles ?
3. A pupil gave 3 cents for a pencil and 2 cents for a top. How much did he give for both ?
4. Mary paid 5 cents for a bottle of ink and 2 cents less for a postage stamp. How much did the postage stamp cost ?
5. A ton of coal cost four dollars (\$4), and a load of wood two dollars (\$2). What was the cost of both ?
6. A quart of milk costs 6 cents, and a pound of sugar 2 cents less. What is the cost of the sugar ?
7. A man traveled 5 miles by rail and 2 miles afoot. How far did he travel ?
8. A yard of lace costs \$7, and a yard of velvet \$2 less. What is the cost of the velvet ?
9. A dealer sold 3 barrels of flour to one man, and 3 barrels to another. How many barrels were sold to both ?
10. James read 6 pages of history, and John read 3 pages less. How many pages did John read ?
11. A wagon has 4 wheels, and a tricycle has 3 wheels. How many wheels have both ?
12. A girl is 7 years of age, and her brother is 3 years younger. How old is the brother ?
13. A boy had 5 marbles left after losing 3 marbles. How many marbles had he at first ?

LESSON II.

1. A man earned \$8, and a boy in the same time earned \$4 less. How much did the boy earn?

2. A farmer has one field of 5 acres, and another field of 4 acres. How many acres are there in both fields?

3. A man paid \$9 for a pair of shoes, and \$4 less for a hat. How much did he pay for the hat?

4. Five dollars was paid for a vest, and \$5 for a boy's sled. How much was paid for both?

5. One man bought 10 pounds of tea, and another man bought 5 pounds less. How many pounds did the second man buy?

6. A table was sold for \$6, and a rocking chair for \$2. How much was received for both?

7. A dealer sold 8 tons of coal to one man, and 2 tons less to another. How many tons did he sell to the second man?

8. A farmer planted 6 acres of land in wheat and 3 acres in corn. How many acres were planted in both grains?

9. A field is 9 rods in length and 3 rods less in width. How wide is the field?

10. A barrel of apples is worth \$6, and a barrel of flour is worth \$4. How much are they both worth?

11. Mr. A. has built a house of 10 rooms, and Mr. B. one of 4 rooms less. How many rooms are there in Mr. B.'s house?

12. Albert is 6 years of age, and Robert is 5 years older. How old is Robert?

13. John gathered 11 roses and gave 5 of them to his sister Helen. How many roses did he keep?

14. How many oranges has a man, if he can give 2 to his daughter and keep 7?

15. John bought a slate for 9 cents and sold it at a loss of 2 cents. How much did he get for the slate?

LESSON III.

1. Mrs. C. bought 7 pounds of coffee and 3 pounds of tea. How many pounds of coffee and tea did she buy?

2. Lucy gathered 10 quarts of cherries, which was 3 quarts more than Hannah gathered. How many quarts did Hannah gather?

3. There are 7 quarts of milk in a can. If 4 quarts more are put into it, how many quarts will there be in it?

4. A chain was 11 feet in length, from which 4 feet were cut off. How many feet were left?

5. If a ton of coal is worth \$7, and a barrel of flour is worth \$5, how much are both worth?

6. Sarah earned 12 credits in school, which was 5 credits more than Joseph earned. How many credits did Joseph earn?

7. If a man buys a cord of wood for \$8, and a clock for \$2, how much does he pay for both?

8. One horse ate 10 quarts of oats while another horse ate 2 quarts less. How many quarts did the second horse eat?

9. A grocer put 8 barrels of cider into one room and 3 barrels into another. How many barrels did he put into both rooms?

10. A farmer has 11 horses at pasture in one field and 3 horses less in another. How many horses has he in the second field?

11. A boy gathered 8 quarts of nuts from one tree and 4 quarts from another. How many quarts of nuts did he gather from both trees?

12. From A to B is 8 miles, and from A to C is 5 miles farther. How far is it from A to C?

13. The cost of a saddle is \$9, and the cost of a bridle is \$2. What is the cost of both?

LESSON IV.

1. James paid \$11 for a coat, which was \$2 more than the cost of his shoes. What was the cost of his shoes?

2. A farmer took 9 bushels of wheat and 3 bushels of corn to the mill. How many bushels of grain did he take to the mill?

3. A man bought a sheep for \$12, and sold it at a loss of \$3. How much did he get for it?

4. The same man bought another sheep for \$9, and sold it at a gain of \$4. How much did he get for it?

5. A dealer sold a slate for 13 cents, which was 4 cents more than it cost. How much did it cost him?

6. A book which cost 9 cents was sold for 5 cents more than the cost. How much was received for it?

7. To one man were sold 14 boxes of tea, and to another 5 boxes less. How many boxes were sold to the latter?

8. A lady paid \$10 for a shawl, and \$2 for a hat. How much did she pay for both?

9. William had 12 marbles, which was 2 marbles more than George had. How many marbles had George?

10. Mr. B. paid \$10 for a pair of shoes, and \$3 for a summer vest. How much did he pay for both?

11. A boy who went hunting shot 13 ducks one day, and 3 ducks less the next day. How many ducks did he shoot the second day?

12. A man walked 10 miles in one day, and 4 miles farther the next day. How far did he walk the second day?

13. Annie's age is 14 years, which is 4 years more than Jennie's age. How old is Jennie?

14. Henry, who earned \$10, received \$5 less than Charles. How much did Charles receive?

15. Robert, who is 15 years old, is 5 years older than James. How old is James?

LESSON V.

1. A fruit dealer sold 11 quarts of nuts at one time, and 2 quarts at another. How many quarts did he sell?

2. Mr. A. paid \$13 for a coat, and \$2 less for a watch chain. How much did he pay for the chain?

3. A man who had 11 feet of wire found that it was 3 feet too short for his needs. How long a wire did he need?

4. Henry, who is 14 years of age, is 3 years older than his sister Alice. How old is Alice?

5. A farmer during the winter cut 11 cords of wood, and his son cut 4 cords. How many cords did both cut?

6. A miller ground 15 bushels of wheat, and 4 less bushels of corn. How many bushels of corn did he grind?

7. Mr. F. cut 11 tons of hay from one field, and 5 tons from another. How many tons did he cut from both fields?

8. Sixteen bunches of grapes were gathered from one vine, and 5 bunches less from another. How many bunches were gathered from the second vine?

9. A laborer lost 12 days in one month, and 2 days in the next. How many days did he lose in the two months?

10. A boy gathered 14 quarts of cherries from one tree, which was 2 quarts more than he gathered from another. How many quarts did he gather from the second tree?

11. A suit of boy's clothes cost \$3 more than \$12. How much did the suit cost?

12. If a hunter shot 15 ducks in the forenoon, and 3 less in the afternoon, how many did he shoot in the afternoon?

13. A man who had traveled 12 miles found that he had 4 miles more to go. What was the length of his journey?

14. A strip of paper is 16 inches long and 4 inches wide. How much greater is the length of the strip than the width?

15. A boy who had \$12 wanted \$5 more to pay for a suit of clothes. What was the cost of the suit?

LESSON VI.

1. A traveled from C to D in 17 hours, which was 5 hours more than the time it took him to return. In how many hours did he make his return journey?

2. If a man can earn \$13 while a boy earns \$2, how much can both earn?

3. A man paid \$15 for a watch, which was \$2 more than the cost of his chain. How much did the chain cost?

4. Kate is 13 years of age, and Margaret is 3 years older. How old is Margaret?

5. Albert earned 16 cents in one hour, and 3 cents less the next hour. How much did he earn the second hour?

6. The distance from A to B is 13 miles, and from A to C is 4 miles farther. How far is it from A to C?

7. A room is 17 feet in length, and its width is 4 feet less. How wide is the room?

8. A pupil paid 13 cents for a slate, and 5 cents more for a book. What was the cost of the book?

9. From a piece of carpet 18 feet long, 5 feet were cut off. How many feet of carpet were left?

10. A lady paid \$14 for a bonnet, and \$2 more for a cloak. How much did she pay for the cloak?

11. A room is 16 feet wide, and its width is 2 feet more than its height. How high is the room?

12. Mr. B. traveled 14 miles by rail, and 3 miles afoot. How far did he travel both ways?

13. Mary Wilson is 17 years old to-day. How old was she 3 years ago?

14. A boy traveled 14 miles, and had 4 miles yet to travel. How many miles was his whole journey?

15. From a cask of wine containing 18 gallons, 4 gallons leaked out. How many gallons remained in the cask?

LESSON VII.

1. A teacher bought a map for \$14, and some books for \$5. How much did he pay altogether?

2. A grocer bought 19 barrels of flour, which was 5 barrels more than he had on hand. How many barrels had he on hand?

3. A lady bought 15 yards of silk at one store, and 5 yards at another. How many yards of silk did she buy?

4. A farmer fed 20 sheep in one field, and 5 sheep less in another. How many sheep were fed in the second field?

5. Charles's age is 16 years, which is 2 years less than Robert's age. How old is Robert?

6. A man bought 18 pounds of sugar, and 2 pounds less of soap. How many pounds of soap did he buy?

7. Mr. B. walked 16 miles in the morning, and 3 miles in the afternoon. How far did he walk during the day?

8. George caught 19 fish, which was 3 more than Albert caught. How many fish did Albert catch?

9. A boy read 16 pages of history yesterday, and 4 pages the day before. How many pages did he read?

10. A book cost 20 cents, and a slate 4 cents less. How much did the slate cost?

11. A lady paid \$16 for a shawl, and \$5 more for a dress. What was the cost of the dress?

12. A railroad train consisted of 21 cars. If 5 cars were detached, how many cars remained?

13. There are 17 cows in one field, and 2 cows more in another. How many cows are in the second field?

14. Sarah's letter contains 19 lines, and Jane's 2 lines less. How many lines are there in Jane's letter?

15. A farmer raised 17 bushels of wheat on one acre, and 3 bushels more than that on another. How many bushels did he raise on the second acre?

LESSON VIII.

1. A man paid \$ 20 for a suit of clothes, and \$ 3 less for an overcoat. How much did he pay for the overcoat?

2. A boy has \$ 17 in the bank. If he puts in \$ 4 more, how many dollars will he have in the bank?

3. Edward is 21 years of age. How old was he 4 years ago?

4. There are 17 bushels of corn in one bin, and 5 bushels more than that in another. How many bushels are there in the second bin?

5. Mr. B. bought 22 head of cattle, and sold 5 of them. How many cattle had he left?

6. A lady bought 18 pounds of butter and 2 pounds of rice. How many pounds of food did she buy?

7. A boy earned \$ 20 in May, and \$ 2 less in June. How much did he earn in June?

8. If a pound of cheese costs 18 cents, and a bar of soap 3 cents, what is the cost of both?

9. A watch was sold for \$ 21, whereby \$ 3 was gained. What was the cost of the watch?

10. The cost of a clock was \$ 18, and it was sold at a gain of \$ 4. What was the selling price?

11. The distance from A to B is 22 miles, which is 4 miles farther than from A to C. How far is it from A to C?

12. A young man is 18 years old, and his age is 5 years more than his brother's. How old is his brother?

13. A gardener picked 23 roses, and gave away 5 of them. How many did he keep?

14. Julia has 19 peaches, which is 2 peaches less than Mary has. How many peaches has Mary?

15. James earned \$ 21, and received all but \$ 2 of that amount. How much did he receive?

LESSON IX.

1. The cost of a table is \$19, and the cost of a set of chairs is \$3 more. What is the cost of the chairs?

2. From a piece of cloth containing 22 yards, 3 yards were cut. How many yards remained?

3. Alice saw 19 ducks in one flock, and 4 ducks in another. How many ducks did she see in both flocks?

4. From a basket containing 23 peaches, Ruth took 4 peaches. How many were left in the basket?

5. A watch was sold for \$19, and a chain for \$5. How much was received for both?

6. The length of a room is 24 feet, and its width is 5 feet less. How wide is the room?

7. Blanche is 21 years of age, and Harriet is 5 years older. How old is Harriet?

8. Nettie is 26 years of age, and George is 4 years younger. How old is George?

9. Fred picked 23 quarts of strawberries, and Frank picked 5 quarts more. How many quarts did Frank pick?

10. A jeweler sold a ruby for \$26, which was \$4 more than it cost him. How much did it cost him?

11. A set of harness cost \$24, and a bridle \$5. What was the cost of both?

12. Out of a flock of 28 geese, 4 geese were killed. How many were left alive?

13. A man has 28 bushels of wheat, which is 5 bushels less than his stock of corn. How much corn has he?

14. From a barrel containing 31 gallons of molasses, 5 gallons leaked out. How many gallons remained?

15. What was the selling price of a watch, if it cost \$37 and was sold at a loss of \$4?

16. A house is 38 feet high, and is 5 feet higher than the next house. How high is the next house?

LESSON X.

1. If one apple costs 2 cents, what, at the same rate, is the cost of 2 apples?
2. If one peach costs 3 cents, what, at the same rate, is the cost of 2 peaches?
3. If one pear is worth 2 cents, how much, at the same rate, are 3 pears worth?
4. If a boy can earn 4 cents each hour, how much can he earn in 2 hours?
5. At 2 cents a yard, how much are 4 yards of tape worth?
6. If one yard equals 3 feet, how many feet do 3 yards equal?
7. If a man works 5 days each week, how many days does he work in 2 weeks?
8. If one pencil costs 2 cents, what, at the same rate, is the cost of 5 pencils?
9. At the rate of 6 cents a mile, how much does it cost to ride 2 miles?
10. If one orange costs 4 cents, what, at the same rate, is the cost of 3 oranges?
11. If a man can earn \$3 a day, how much can he earn in 4 days?
12. If one quart of milk costs 7 cents, what, at the same rate, is the cost of 2 quarts?
13. If a man can walk 5 miles an hour, how far can he walk in 3 hours?
14. If a boy can earn \$3 each week, how much can he earn in 5 weeks?
15. Mary is 8 years old, and Ann is twice as old. How old is Ann?
16. If one pair of shoes costs \$4, what, at the same rate, is the cost of 4 pairs of shoes?

LESSON XI.

1. If one square yard equals 9 square feet, how many square feet do 2 square yards equal ?

2. If one yard of ribbon costs 6 cents, how much are 3 yards of the same ribbon worth ?

3. At 10 cents a pound, what is the cost of 2 pounds of soap ?

4. If a man can walk 5 miles each hour, how far can he walk in 4 hours ?

5. If a square contains 4 square feet, how many square feet do 5 such squares contain ?

6. If there are 7 days in a week, how many days are there in 3 weeks ?

7. If one dozen eggs are worth 11 cents, how much are 2 dozen worth ?

8. One dozen equals 12 units. How many units equal 2 dozen ? 3 dozen ?

9. If a boy can earn \$8 each week, how much can he earn in 3 weeks ?

10. If a man works 6 days each week, how many days does he work in 4 weeks ?

11. There are 5 petals in one wild rose. How many petals are there in 5 wild roses ?

12. If one quart of oil costs 9 cents, how much is the cost of 3 quarts ?

13. If one ton of coal costs \$7, how much do 4 tons cost ?

14. At \$10 a cord, how much do 3 cords of wood cost ?

15. If one barrel of flour costs \$6, how much do 5 barrels of flour cost ?

16. Mr B. traveled 8 miles by stage, and 4 times as far by rail. How far did he travel by rail ?

LESSON XII.

1. A boy had \$11, and his father gave him 3 times as much. How much did his father give him?

2. John is 7 years old, and his father is 5 times as old. How old is his father?

3. At \$12 a barrel, what is the cost of 3 barrels of chestnuts?

4. Horace worked 9 days, and Joseph 4 times as long. How many days did Joseph work?

5. At 10 cents an hour, how much can a boy earn in 4 hours?

6. A man traveled 8 miles an hour by stage, and 5 times as fast by rail. How far did he travel an hour by rail?

7. James earns \$11 a week, and his father earns 4 times as much. How much does the father earn?

8. At \$9 for each chair, what is the cost of 5 rocking chairs?

9. One pound of cheese costs 12 cents. How much are 4 pounds worth?

10. At the rate of 10 miles an hour, how far can a man travel in 5 hours?

11. At \$11 a head, what is the cost of 5 head of sheep?

12. If a laborer receives \$12 each week, how much does he receive in 5 weeks?

13. A farmer bought 2 cows at \$20 each. How much did he pay for them?

14. A dealer sold 3 ice boxes at \$20 each. How much did he receive for them?

15. If the cost of one sideboard is \$20, how much are 4 such sideboards worth?

16. If a man can earn \$20 each week, how much can he earn in 5 weeks?

LESSON XIII.

1. If a man has worked 4 days, and a boy $\frac{1}{2}$ as many days, how many days has the boy worked?

2. A gallon of oil costs 6 cents, and a spool of thread costs $\frac{1}{2}$ as much. How much does the thread cost?

3. A girl gathered 6 quarts of nuts, and a boy $\frac{1}{2}$ as many. How many quarts did the boy gather?

4. A man walked 8 miles, and his son $\frac{1}{2}$ as far. How far did the son walk?

5. A farmer had 8 horses in a field, and $\frac{1}{4}$ as many horses in his barn. How many horses were there in the barn?

6. A slate costs 9 cents, and a pencil $\frac{1}{3}$ as much. What is the cost of the pencil?

7. A woman earned \$10, and her daughter earned $\frac{1}{2}$ as much in the same time. How many dollars did the daughter earn?

8. A boy earned 10 cents, and paid $\frac{1}{3}$ of it for a top. What was the cost of the top?

9. A man bought 12 head of cattle, and sold $\frac{1}{3}$ of them. How many cattle did he sell?

10. Mr. A. rode 12 miles by rail, and walked $\frac{1}{3}$ as far. How far did he walk?

11. A man paid \$12 for coal, and $\frac{1}{4}$ as much for wood. How much did he pay for the wood?

12. A man paid \$14 for a saddle, and $\frac{1}{2}$ as much for a bridle. How much did he pay for the bridle?

13. Mr. B. paid \$15 for an overcoat, and $\frac{1}{3}$ as much for a hat. How much did he pay for the hat?

14. James is 15 years of age, and Charles is $\frac{1}{3}$ as old. What is the age of Charles?

15. There are 16 ounces in one pound. How many ounces are there in $\frac{1}{2}$ of a pound? In $\frac{1}{4}$ of a pound?

LESSON XIV.

1. There are 16 sheep in one field, and $\frac{1}{4}$ as many in another. How many sheep are there in the second field?

2. A man bought 18 bushels of oats, and $\frac{1}{2}$ as much corn. How many bushels of corn did he buy?

3. Mr. B. earns \$18 a week, and his son earns $\frac{1}{3}$ as much. How much does the son earn?

4. Bruce is 20 years of age, and his brother is $\frac{1}{2}$ as old. How old is the brother?

5. A boy paid \$20 for a suit of clothes, and $\frac{1}{4}$ as much for a pair of shoes. How much did the shoes cost him?

6. There are 20 pupils in a class, $\frac{1}{5}$ of whom are boys. How many boys are there in the class?

7. A lot is 21 rods in length, and $\frac{1}{3}$ as much in width. How wide is the lot?

8. A chain 22 feet long was cut into halves. How long was each piece?

9. A man started on a journey of 24 miles. The first day he traveled $\frac{1}{4}$ of it. How far did he travel the first day?

10. A man bought 24 acres of land, $\frac{1}{3}$ of which was woodland. How much was woodland?

11. If a piece of lead weighs 24 pounds, how many pounds does $\frac{1}{4}$ of it weigh?

12. A man's weekly earnings are \$25, $\frac{1}{5}$ of which he gives for rent. How much does he give for rent?

13. The distance from A to B is 27 miles, and the distance from B to C is $\frac{1}{3}$ as great. What is the distance from B to C?

14. Mrs. Scott is 28 years of age, and her son is $\frac{1}{4}$ as old. How old is the son?

15. Thirty dollars was paid for a folding bed, and $\frac{1}{3}$ as much for a lounge. How much was paid for the lounge?

LESSON XV.

1. A man traveled 30 miles in one day, and $\frac{1}{2}$ as far the next day. How far did he travel the second day?
2. A farmer planted 32 trees in one lot, and $\frac{1}{4}$ as many in another lot. How many trees were planted in the second lot?
3. An express train runs 33 miles an hour, and a freight train $\frac{1}{3}$ as fast. What is the speed of the freight train?
4. Mr. B. earns \$36 a month, and spends $\frac{1}{3}$ of it. How much does he spend each month?
5. A farmer bought 36 acres of land, and sold $\frac{1}{4}$ of it. How many acres did he sell?
6. Mr. C. is 40 years old, and his son is $\frac{1}{4}$ as old. How old is the son?
7. A dealer sold 40 bushels of corn, and $\frac{1}{2}$ as many bushels of oats. How many bushels of oats did he sell?
8. Mr. A. built 44 rods of fence, $\frac{1}{4}$ of which he built in one day. How many rods of fence did he build in one day?
9. A pole was 45 feet high, $\frac{1}{3}$ of which was broken off in a storm. How many feet were broken off?
10. A man traveled 48 miles by rail, and $\frac{1}{4}$ as far by boat. How far did he travel by boat?
11. A drover had 50 sheep in one field, and $\frac{1}{2}$ as many in another. How many sheep were there in the second field?
12. A farmer owned 55 acres of land, $\frac{1}{5}$ of which he planted in corn. How many acres were planted in corn?
13. Mr. King earns \$60 a month, and pays $\frac{1}{3}$ of it for rent. How much rent does he pay a month?
14. A man paid \$40 for a sofa, and $\frac{1}{2}$ as much for a dining table. How much did he pay for the table?
15. A piece of land was sold for \$60 an acre. How much was $\frac{1}{3}$ of an acre worth?

LESSON XVI.

1. If 2 yards of velvet cost \$4, what is the cost of one yard?

2. How much does one yard of cloth cost, if 2 yards cost \$6?

3. What is the value of one ton of soft coal, if 3 tons are worth \$6?

4. If 2 cords of wood cost \$8, how much does one cord cost?

5. How much can a man earn in one day, if he can earn \$8 in 4 days?

6. If a man can walk 9 miles in 3 hours, how far can he walk in one hour?

7. How much money can Mr. B. earn in one day, if he can earn \$10 in 2 days?

8. What is the cost of riding one mile, at the rate of 10 cents for 5 miles?

9. A father divided \$12 equally between his two boys. How much money did each boy receive?

10. If 3 yards of silk are worth \$12, what is the value of one yard?

11. If 4 lead pencils are worth 12 cents, how much is one pencil worth?

12. What is the cost of one top, if 2 tops cost 14 cents?

13. If 3 bunches of radishes are worth 15 cents, how much is one bunch worth?

14. If 5 barrels of cider are worth \$15, what is the cost of one barrel?

15. If 2 tons of coal cost \$16, what is the cost of one ton?

16. What is the cost of one orange, if 4 oranges cost 16 cents?

LESSON XVII.

1. What is the cost of one ton of coal, if 3 tons cost \$18?

2. If Mr. B. can earn \$20 in 2 weeks, how much can he earn in one week?

3. If 20 cents is the cost of 4 lemons, at the same rate what is the cost of one lemon?

4. If 5 horses consume 20 quarts of oats at one feed, how many quarts on an average does each horse consume?

5. What is the cost of one quart of oil, if 3 quarts cost 21 cents?

6. If 2 tons of hay cost \$22, how much does one ton of hay cost?

7. The cost of 2 dozen eggs is 24 cents. How much does one dozen of the eggs cost?

8. What is the cost of one pair of shoes, if 3 pairs cost \$24?

9. A man can earn \$24 in 4 weeks. How much does he earn in one week?

10. If 5 barrels of flour can be bought for \$25, what is the cost of one barrel?

11. What is the cost of one pound of grapes, if 3 pounds cost 27 cents?

12. A farmer paid \$28 for 4 head of sheep. What was the cost of each sheep, if all are of equal value?

13. If in one week 3 boys, each earning the same amount, can earn \$30, how much does each boy earn?

14. What is the cost of one paper of needles, if 5 papers cost 30 cents?

15. Four boys shared equally a melon which cost 32 cents. How much should each one pay?

16. If the value of 3 sheep is \$21, what is the value of one sheep?

LESSON XVIII.

1. If 3 yards of cambric cost 33 cents, what is the cost of one yard?

2. How far does a horse travel in one hour, if he travels 35 miles in 5 hours?

3. A man paid \$36 for 3 suits of clothes. What was the price for each suit, if each cost the same amount?

4. If 4 marble-top tables, all of the same style, cost \$36, what is the cost of one table?

5. The cost of 2 kitchen ranges was \$40. How much is one range worth?

6. If 40 cents is paid for riding 4 miles, what rate is that per mile?

7. If Mr. A. can travel 40 miles in 5 hours, how far can he travel in one hour?

8. The price paid for 4 sheep was \$44. What was the average price for each sheep?

9. If a man's wages are \$45 for 5 weeks, how much does he earn each week?

10. How much does each laborer earn a week, if 4 laborers earn \$48?

11. Mr. H. divided \$50 equally among his 5 children. How much was given to each?

12. A distance of 55 miles of railroad was divided into 5 equal sections. How many miles were in each section?

13. The rent of a cottage for 5 months was \$60. What was the rent per month?

14. A steamship sails 60 miles in 3 hours. What is its rate of speed per hour?

15. A contractor divided \$100 equally among 5 men. How much did he give to each man?

16. A man paid \$80 for 4 office desks, which were exactly alike. What was the price of one desk?

LESSON XIX.

1. At \$2 a yard, how many yards of carpet can be bought for \$4?
2. At \$2 an ounce, how many ounces of a certain drug can be bought for \$6?
3. At the rate of \$3 a day, in how many days can a man earn \$6?
4. At 2 cents each, how many roses can be bought for 8 cents?
5. How many miles can a man ride for 8 cents, if he pays 4 cents for riding one mile?
6. At \$3 a yard, how many yards of silk can be bought for \$9?
7. At \$2 a pair, how many pairs of skates can be bought for \$10?
8. If one cord of wood costs \$5, how many cords can be bought for \$10?
9. At \$2 a day for each man, how many men can earn \$12 in one day?
10. At 3 cents a pound, how many pounds of salt can be bought for 12 cents?
11. If one quart of oil costs 4 cents, how many quarts can be bought for 12 cents?
12. At \$2 for each day, in how many days can a man earn \$14?
13. A man paid \$15 for hats at \$3 each. How many hats did he buy?
14. A lady paid 15 cents car fare for herself and friends. If the fare for each person was 5 cents, how many persons were paid for?
15. At 10 cents a box, how many boxes of berries can be bought for 50 cents? For 70 cents? For 90 cents? For 100 cents?

LESSON XX.

1. If there are 4 pecks in one bushel, how many bushels are there in 16 pecks ?

2. If a contractor can erect 2 houses each month, in how many months can he erect 18 houses ?

3. If a pear tree grows 3 inches each week, in how many weeks will it grow 18 inches ?

4. In how many days will a pupil recite 20 lessons, if he recites 2 lessons each day ?

5. If one pair of shoes costs \$4, how many pairs can be bought for \$20 ?

6. At \$5 a barrel, how many barrels of flour can be bought for \$20 ?

7. If a man can work only 3 days each week, in how many weeks can he work 21 days ?

8. At \$2 each, how many umbrellas can be bought for \$22 ?

9. At \$2 a dozen, how many dozen pearl buttons can be bought for \$24 ?

10. If a farmer can plow 3 acres of land each day, in how many days can he plow 24 acres ?

11. If a farmer's stock consume 4 tons of hay each month, in how many months do they consume 24 tons ?

12. At the rate of 5 miles an hour, in how many hours can a man travel 25 miles ?

13. At \$3 a yard, how many yards of silk can be bought for \$27 ?

14. There are 4 quarts in one gallon. How many gallons are there in 28 quarts ?

15. At \$2 a yard, how many yards of velvet can be bought for \$30 ?

16. There are 3 feet in one yard. How many yards are there in 27 feet ?

LESSON XXI.

1. A farmer obtained 30 pounds of wool from his sheep, which was an average of 3 pounds of wool from each sheep. How many sheep had he ?

2. At 5 cents each, how many lead pencils can be bought for 30 cents ?

3. At the rate of 4 cents each, how many lemons can be bought for 32 cents ?

4. How many quarts of oil at 3 cents a quart can be bought for 33 cents ?

5. If there are 5 trees in each row, how many rows of trees are there in an orchard of 35 trees ?

6. At \$ 3 a hundredweight, how many hundredweight of flour can be bought for \$ 36 ?

7. If a man earns \$ 4 each day, in how many days can he earn \$ 36 ?

8. If a dealer sells 2 carriages each day, in how many days will he sell 40 carriages ?

9. Four pecks equal one bushel. How many bushels do 40 pecks equal ?

10. If a man can dig 5 bushels of potatoes each hour, in how many hours can he dig 40 bushels ?

11. At the rate of \$ 4 for one chair, how many chairs can be bought for \$ 44 ?

12. If, with a machine, a man can cut 5 acres of grass each hour, in how many hours can he cut 45 acres ?

13. If a family consume 4 pounds of meat each day, in how many days do they consume 48 pounds ?

14. If a horse can walk 5 miles an hour, in how many hours can he walk 50 miles ?

15. A dealer sold 5 barrels of flour each day until 60 barrels were sold. In how many days were the 60 barrels sold ?

LESSON XXII.

1. One yard equals 3 feet. How many feet in $\frac{1}{2}$ of a yard? In $\frac{2}{3}$ of a yard?
2. One gallon equals 4 quarts. How many quarts in $\frac{1}{2}$ of a gallon? In $\frac{3}{4}$ of a gallon?
3. A chain is 5 yards long. How long is $\frac{1}{2}$ of the chain? $\frac{2}{3}$ of it?
4. A wire 5 feet in length is cut into fifths. How long is $\frac{3}{5}$ of the wire? $\frac{1}{5}$ of it?
5. There are 6 working days in each week. How many working days are there in $\frac{2}{3}$ of a week?
6. If one peck equals 8 quarts, how many quarts equal $\frac{3}{4}$ of a peck?
7. If a man can earn \$9 a day, how much can he earn in $\frac{2}{3}$ of a day?
8. A rope is 10 feet long. What is the length of $\frac{2}{3}$ of it? Of $\frac{1}{3}$ of it? Of $\frac{1}{4}$ of it?
9. A house lot is 12 rods long. Find $\frac{2}{3}$ of the length.
10. The cost of a lady's bonnet was \$12. What was $\frac{3}{4}$ of the cost?
11. The distance from A to B is 15 miles. How far did a man travel who went $\frac{2}{3}$ of the distance?
12. There are 15 pupils in a class, $\frac{2}{3}$ of whom are boys. How many boys are there in the class?
13. A flag pole extended 15 feet above the roof, and $\frac{2}{3}$ of it was broken off in a storm. How many feet were broken off?
14. James is 16 years of age, and Clarence is $\frac{3}{4}$ as old. How old is Clarence?
15. Sarah picked 18 quarts of cherries, and Alice $\frac{2}{3}$ as many. How many quarts did Alice pick?
16. Mary shelled 4 quarts of peas, and her sister $\frac{3}{4}$ as many. How many quarts did the sister pick?

LESSON XXIII.

1. Mr. A. bought a piece of land containing 20 acres, and sold $\frac{3}{4}$ of it. How many acres did he sell?

2. A man paid \$20 for a suit, and $\frac{1}{2}$ as much for an overcoat. How much did he pay for the overcoat?

3. Mr. Smith traveled 21 miles by rail, and $\frac{2}{3}$ as far by boat. How far did he travel by boat?

4. There are 24 hours in one day. How many hours are there in $\frac{2}{3}$ of a day?

5. A man has two sons, one of whom is 24 years old, and the other $\frac{2}{3}$ as old. How old is the younger son?

6. A vessel that holds 25 gallons is $\frac{3}{5}$ full of water. How many gallons of water are there in the vessel?

7. A farmer who had 27 bushels of wheat took $\frac{2}{3}$ of it to the mill. How many bushels did he take to the mill?

8. One man earns \$28 a week, and another $\frac{2}{3}$ as much. How much does the second man earn?

9. A man worked 30 days, and his son $\frac{2}{3}$ as long. How many days did the son work?

10. Of 30 fruit trees in an orchard, $\frac{2}{3}$ are plum trees. How many plum trees are there in the orchard?

11. Of a field of 32 acres, $\frac{3}{4}$ is planted in corn. How many acres are planted in corn?

12. Edward traveled a distance equal to $\frac{2}{3}$ of 33 miles. How far did he travel?

13. Mr. B. is 35 years old, and his wife is $\frac{2}{3}$ as old. How old is the wife?

14. A farmer had a field of 36 acres, $\frac{2}{3}$ of which was planted in wheat. How many acres were planted in wheat?

15. The value of an acre of land is $\frac{2}{3}$ of \$36. What is the value of the acre?

16. A boy earned 32 cents, and spent $\frac{2}{3}$ of it for a book. What was the price of the book?

LESSON XXIV.

1. Of two chains, one is 40 feet long, and the other is $\frac{3}{4}$ as long. How long is the shorter chain?

2. A folding bed is worth \$40, and a lounge $\frac{2}{3}$ as much. How much is the lounge worth?

3. A man dug one well 40 feet deep, and another $\frac{3}{4}$ as deep. How deep is the second well?

4. Forty gallons of water flow into a certain tank in an hour, and $\frac{2}{3}$ as many flow out in the same time. How many gallons flow out?

5. Mr. A. at one time bought 44 books for his library, and at another, $\frac{3}{4}$ as many. How many books did he buy the second time?

6. A's monthly wages are \$45, and B's $\frac{2}{3}$ as much. What are B's monthly wages?

7. A well is 45 feet deep, and is $\frac{3}{4}$ full of water. How many feet of water are there in the well?

8. A pole is 45 feet long, $\frac{2}{3}$ of which is in the air. How many feet are in the air?

9. A laborer agreed to dig a trench 35 feet long, $\frac{2}{3}$ of which he completed in a week. How many feet did he dig in the week?

10. A man bought 50 sheep, and sold $\frac{2}{3}$ of them. How many sheep did he sell?

11. Mr. G. is 50 years old. What is $\frac{3}{4}$ of his age?

12. A can build a barn in 50 days, and B in $\frac{2}{3}$ as long a time. In what time can B build it?

13. There were 55 men in a company, $\frac{2}{3}$ of whom were disabled. How many men were not fit for service?

14. C can build a boat in 60 days, and D in $\frac{2}{3}$ of the time. In how many days can D build it?

15. A father gave \$60 to one child, and $\frac{2}{3}$ as much to another. How much did he give to the second child?

LESSON XXV.

1. If 2 men can do a piece of work in 2 days, in what time can one man do it ?
2. If one man can do a piece of work in 4 days, in what time can 2 men do it ?
3. If 2 men can build a fence in 3 days, in what time can one man build it ?
4. In how many days can one man mow a field of grass, if 2 men can mow it in 4 days ?
5. In how many days can 3 men paint a house, if one man can paint it in 6 days ?
6. In how many weeks can 4 men build a bridge, if one man can build it in 8 days ?
7. If one horse can eat a quantity of oats in 9 weeks, how many horses can eat an equal quantity in 3 weeks ?
8. How many men can slate a roof in 5 days, if one man can slate it in 10 days ?
9. In what time can one man lay a stone wall, if 3 men, working as fast, can lay it in 4 days ?
10. If one man can earn a given sum of money in 15 days, how many men, paid at the same rate, can earn an equal sum in 3 days ?
11. If 10 men consume a keg of cider in 3 days, in what time can one man consume as much ?
12. One pipe can fill a cistern in 16 hours. In what time could 4 such pipes fill it ?
13. If 3 horses consume a certain quantity of oats in 6 days, in how many days can one horse consume an equal quantity ?
14. If 2 men can cut a given quantity of wood in 18 days, how many men, working as fast, can cut it in 9 days ?
15. If 4 men can dig a well in 5 days, in how many days can one man dig it ?

LESSON XXVI.

1. If one man can mine a quantity of coal in 21 days, how many men can mine an equal quantity in 3 days?
2. If 4 men can plow a farm in 6 days, in what time can one man do the same work?
3. If one man can build a car in 25 days, in what time can 5 men build a similar car?
4. It took 3 men 27 days to pave a certain amount of street. What number of men could have done it in 9 days?
5. If one man can earn a given sum of money in 28 days, in how many days can 4 men, doing the same kind of work, earn an equal amount?
6. If 3 horses consume a certain quantity of oats in 10 days, how many horses consume an equal amount in 5 days?
7. How many men can mow a field of grass in 10 days, if 5 men can mow it in 6 days?
8. In how many days can one man dig a trench, if 4 men can dig it in 8 days?
9. How many men can load a boat in 5 days, if 5 men can load it in 7 days?
10. How many men can do as much work in 9 days as 3 men can do in 12 days?
11. In how many days can 4 men do as much work as 5 men can do in 8 days?
12. If 4 men can do a piece of work in 12 days, in how many days can one man do it?
13. If 5 men can build a wall in 10 days, in how many days can 10 men build it?
14. If 4 men can build a fence in 12 days, in what time can $\frac{1}{2}$ as many men build it?
15. What number of men can do as much work in 10 days as 5 men can do in 12 days?

LESSON XXVII.

1. If 2 yards of cloth cost \$3, at the same rate what is the cost of 4 yards?

SUGGESTION.—Four yards are twice 2 yards, and cost twice as much.

2. If 4 copies of a book cost \$6, what is the cost of 2 copies?

SUGGESTION.—Two books are $\frac{1}{2}$ of 4 books, and cost $\frac{1}{2}$ as much.

3. If 3 apples cost 5 cents, at the same rate what do 6 apples cost?

4. If 2 hats are worth \$5, how much, at the same rate, are 6 hats worth?

5. If 6 papers of pins cost 10 cents, how much, at the same rate, do 3 papers of pins cost?

6. What is the cost of 2 gold pens, if 6 gold pens cost \$9?

7. If 8 chairs cost \$12, what, at the same rate, is the cost of 4 chairs?

8. What is the car fare of 6 persons, if the fare of 3 persons is 30 cents?

9. If the cost of 4 china plates is \$9, what is the cost of 12 plates of the same style?

10. What is the cost of 4 hats, if 8 hats of the same kind are worth \$20?

11. If 12 railroad tickets to a certain place cost \$20, what is the cost of 3 tickets to the same place?

12. If 2 fountain pens cost \$7, what is the cost of 10 pens of the same style?

13. If 8 pairs of shoes are worth \$20, what, at the same rate, is the cost of 2 pairs?

14. If 9 yards of velvet cost \$24, what, at the same rate, is the cost of 3 yards?

LESSON XXVIII.

1. If 3 quarts of milk cost 20 cents, how many quarts can be bought for 40 cents?

2. If 4 railroad tickets to a certain town cost \$9, what is the cost of 12 tickets?

3. If 28 books are worth \$32, what, at the same rate, is the cost of 7 books?

4. What is the cost of 3 pictures, if, at the same rate, 15 pictures are worth \$40?

5. What is the cost of 4 pounds of beef, if, at the same rate, 12 pounds cost 30 cents?

6. If a staff 5 feet high casts a shadow of 9 feet, how long a shadow is cast by a staff next to it 10 feet high?

7. If 12 barrels of flour cost \$40, what is the cost of 3 barrels?

8. How much are 15 loads of kindling wood worth, if 3 loads cost \$12?

9. If 9 lamps cost \$24, at the same rate how much are 3 lamps worth?

10. If a pole 24 feet high casts a shadow 30 feet long, how long a shadow does a pole 8 feet high cast?

11. How many tons of hay can be cut from 27 acres of land, if 20 tons are cut from 9 acres of the land?

12. If 12 pails of butter weigh 40 pounds, at the same rate how much do 3 pails of the same size weigh?

13. If 4 men can mow a field of grass in 24 days, how many men can mow the field in 12 days?

14. In how many days can 3 men do as much work as 4 men in 9 days?

15. If 5 hats cost \$11, at the same rate how many hats can be bought for \$44?

16. If 6 pairs of shoes cost \$18, what is the cost of 3 pairs of shoes?

LESSON XXIX.

1. If 4 clocks cost \$12, how many clocks of the same kind can be bought for \$36?
2. How many tons of coal can be bought for \$40, if 3 tons can be bought for \$20?
3. If a man can travel 40 miles in 8 hours, how far, at the same rate, can he travel in 4 hours?
4. If 7 books cost \$11, how many books of the same kind can be bought for \$33?
5. If a staff 4 feet high casts a shadow 5 feet long, what is the length of a staff that casts a shadow 25 feet long?
6. If 3 yards of carpet cost \$4, what is the cost of 15 yards?
7. How far can a man travel in 12 hours, if he can travel 20 miles in 3 hours?
8. If 4 men can build a bridge in 24 days, how many men must be employed to build it in 12 days?
9. In how many days can 9 men dig a ditch, if 3 men can dig it in 30 days?
10. If 5 reading charts cost \$12, what is the cost of 15 such charts?
11. What number of men can do as much work in 5 days as 4 men can do in 10 days?
12. How many pounds of sugar can be bought for 25 cents, if 10 pounds can be bought for 50 cents?
13. If 12 men can do a piece of work in 5 days, how many men can do the same work in 15 days?
14. What is the cost of 3 pairs of shoes, if 12 pairs cost \$40?
15. How many men can earn as much money in 4 days as 3 men can earn in 12 days?
16. If 5 oranges cost 25 cents, what, at the same rate, is the cost of 15 oranges?

LESSON XXX.

1. A worked 4 days in one week, which was twice as much as B worked. How many days did B work?

2. A man earns \$12 a day, which was 3 times as much as his son earns. How much does the son earn?

3. Hannah's age is 24 years, which is 4 times Alice's age. How old is Alice?

4. George traveled 30 miles, which is 5 times as far as John traveled. How far did John travel?

5. A length of 18 feet was broken from a flag pole, and the piece broken off was twice the length of the piece left standing. How many feet were left standing?

6. In one field there were 24 sheep, which was 3 times the number of sheep in another field. How many sheep were there in the second field?

7. A farmer had 28 cattle, and the number of his cattle was 4 times the number of his horses. How many horses had he?

8. Mr. B. is 35 years old, and is 5 times the age of his son. How old is the son?

9. A watch cost \$24, which was twice the cost of a chain. What was the cost of the chain?

10. A suit of clothes cost \$32, which was 4 times the cost of a pair of shoes. How much were the shoes worth?

11. Mr. A. bought 40 acres of land, which was 5 times as much as Mr. B. bought. How many acres did Mr. B. buy?

12. A miner dug 36 tons of coal, which was 3 times as much as his son dug. How many tons did the son dig?

13. Mrs. B. is 44 years of age, and is 4 times the age of her daughter. How old is her daughter?

14. A farmer paid \$60 for clover seed, which was 5 times the cost of his plow. Find the cost of the plow.

LESSON XXXI.

SOLUTIONS WITHOUT ANSWERS.¹

1. What is the cost of 3 acres of land at \$35 an acre?

SUGGESTION. — Since one acre costs \$35, 3 acres cost 3 times \$35.

2. At \$40 each, what is the cost of 4 cows?

3. If it costs \$45 to pave 3 rods of street, what is the cost per rod?

4. At the rate of \$4 a day, in how many days can a man earn \$80?

5. If one gallon of oil is worth 27 cents, what is the value of 3 gallons?

6. How many tubs of butter can be bought for \$72, if one tub costs \$4?

7. How far can a man walk each day, if he can walk 50 miles in 4 days.

8. If one ton of hard coal is worth \$7, how much, at the same rate, are 6 tons worth?

9. If Blanche can gather 100 quarts of nuts in 5 days, how many quarts can she gather each day?

10. If the expenses of a family are \$5 each day, in how many days do their expenses amount to \$200?

11. What is the cost of 6 lounges, if each lounge costs \$15?

12. If a freight train travels at the rate of 54 miles in 4 hours, what is its rate of speed per hour?

13. If 6 boys' suits of the same quality are worth \$90, how much is each suit worth?

14. At \$7 each week, in how many weeks can a boy earn \$84?

¹ Only the methods of solution to problems under this head need be given by the pupils, the answers being omitted.

LESSON XXXII.

SOLUTIONS WITHOUT ANSWERS.

1. At \$12 a ton, what is the cost of 8 tons of hay?

SUGGESTION. — Since one ton of hay costs \$12, 8 tons cost 8 times \$12.

2. If 8 pounds of butter cost \$2, what is the cost of one pound?

3. How many pictures can be bought for \$72, if each picture can be bought for \$8?

4. If a man can earn \$50 in one month, how much can he earn in $\frac{1}{2}$ of a month?

5. If $\frac{1}{3}$ of a man's age is 9 years, how old is he? How old will he be in 10 years?

6. How old is a man, if $\frac{1}{4}$ of his age is 12 years? How old was he 5 years ago?

7. How much money can a man earn in one week, if he can earn \$5 in $\frac{1}{2}$ of a week?

8. If 8 bookcases are worth \$96, what is the value of one of the bookcases?

9. How many sheep can be bought for \$108, at a cost of \$9 each?

10. At a cost of \$10 each, how many chairs can be bought for \$90?

11. If 10 loads of coal cost \$100, how much, at the same rate, do 5 loads cost?

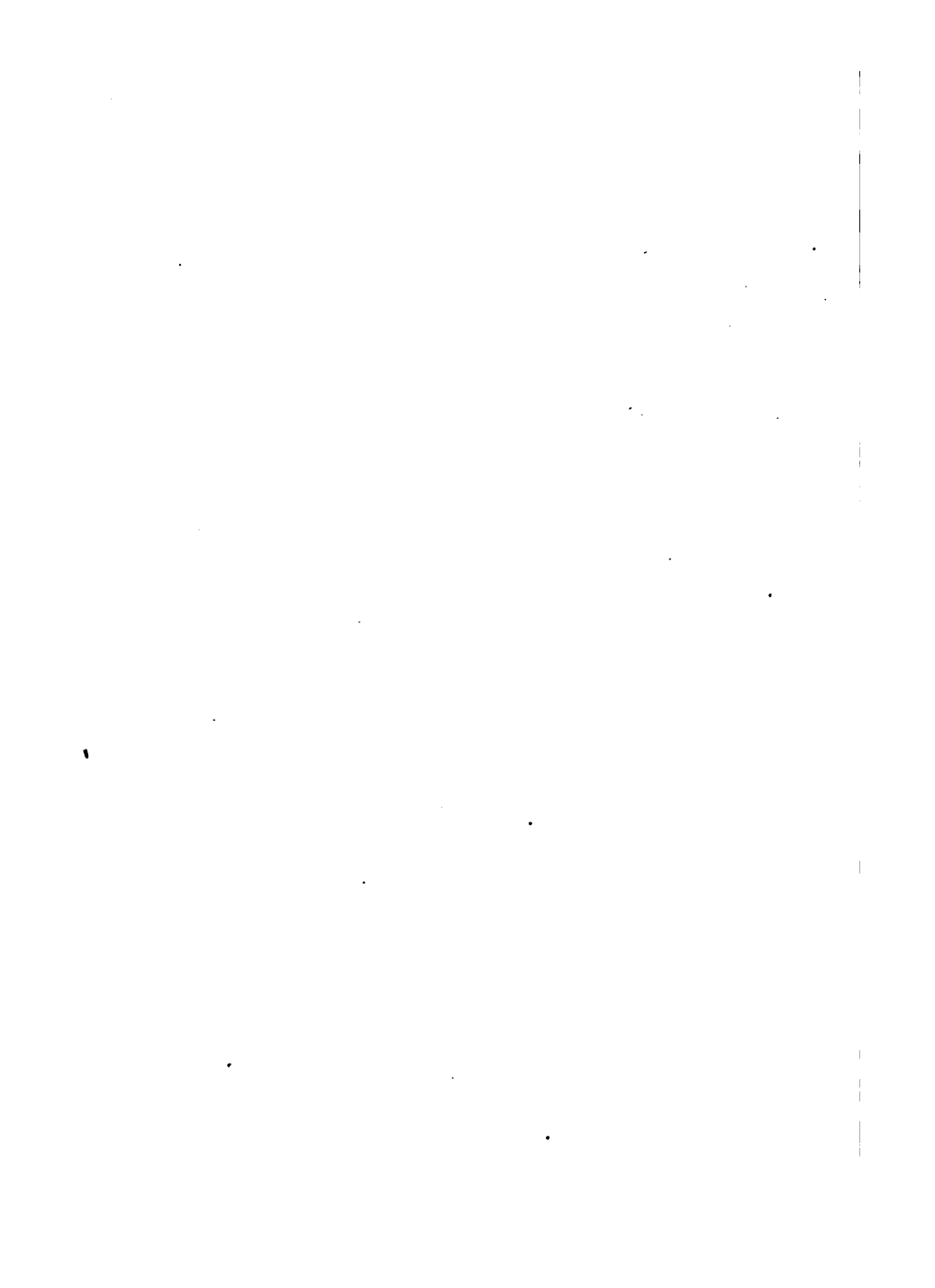
12. If 3 summer hats are worth \$5, how much, at the same rate, are 2 hats worth?

13. If 2 books are sold for \$7, at the same rate, what is the selling price of 3 books?

14. How much should be paid for 4 finger rings, if 5 finger rings of the same kind are worth \$10?

15. How much can a man earn in 5 days, if he can earn \$12 in 4 days?

THIRD GRADE.



THIRD GRADE.

LESSON I.

1. How many apples are twice six apples ?
2. How many oranges are three times six oranges ?
3. How many lemons are four times six lemons ?
4. How many books are five times six books ?
5. How many pages are six times six pages ?
6. How many words are seven times six words ?
7. How many letters are eight times six letters ?
8. How many clocks are nine times six clocks ?
9. How many slates are ten times six slates ?
10. How many lessons are eleven times six lessons ?
11. How many horses are twelve times six horses ?
12. How many oxen are seven times six oxen ?
13. How many cows are four times six cows ?
14. How many sheep are nine times six sheep ?
15. How many feet are ten times six feet ?
16. How many yards are three times six yards ?
17. How many rods are eleven times six rods ?
18. How many cubes are six times six cubes ?
19. John has six marbles ; James has twice as many.
How many marbles have both ?
20. Mary has six roses ; Ann has four times as many.
How many roses have both ?
21. Charles has six cents, and John has ten times as many. How many cents have both ?
22. There are six eggs in each of eight baskets. How many eggs in all ?
23. Mary has three times 6 cents, and Jennie has five times 6 cents ; how many cents have both ?

LESSON II.

1. How many are five and six ? Fifteen and six ? Twenty-five and six ? Thirty-five and six ? Forty-five and six ? Fifty-five and six ? Sixty-five and six ? Seventy-five and six ? Eighty-five and six ? Ninety-five and six ?

2. How many are six and six ? Sixteen and six ? Twenty-six and six ? Thirty-six and six ? Forty-six and six ? Fifty-six and six ? Sixty-six and six ? Seventy-six and six ? Eighty-six and six ? Ninety-six and six ?

3. How many are seven and six ? Seventeen and six ? Twenty-seven and six ? Thirty-seven and six ? Forty-seven and six ? Fifty-seven and six ? Sixty-seven and six ? Seventy-seven and six ? Eighty-seven and six ? Ninety-seven and six ?

4. How many are eight and six ? Eighteen and six ? Twenty-eight and six ? Thirty-eight and six ? Forty-eight and six ? Fifty-eight and six ? Sixty-eight and six ? Seventy-eight and six ? Eighty-eight and six ? Ninety-eight and six ?

5. How many are nine and six ? Nineteen and six ? Twenty-nine and six ? Thirty-nine and six ? Forty-nine and six ? Fifty-nine and six ? Sixty-nine and six ? Seventy-nine and six ? Eighty-nine and six ? Ninety-nine and six ?

6. How many are three fives and six ? Three fours and six ? Five fives and six ? Five threes and six ? Three threes and six ? Six fours and six ? Six threes and six ? Seven fours and six ? Nine fives and six ? Eight threes and six ? Nine threes and six ? Nine twos and six ? Eight fours and six ? Eight twos and six ? Four fives and six ? Five fours and six ? Four threes and six ? Seven twos and six ? Four twos and six ? Seven threes and six ? Four fours and six ? Six fives and six ? Eight fives and six ? Nine fours and six ? Six twos and six ? Seven fives and six ?

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11-6?

LESSON III.

How many are:

~~Eleven less six?~~
 Twenty-one less six?
 Thirty-one less six?
 Forty-one less six?
 Fifty-one less six?
 Sixty-one less six?
 Seventy-one less six?
 Eighty-one less six?
 Ninety-one less six?
 One hundred one less six?
 Twelve less six?
 Twenty-two less six?
 Thirty-two less six?
 Forty-two less six?
 Fifty-two less six?
 Sixty-two less six?
 Seventy-two less six?
 Eighty-two less six?
 Ninety-two less six?
 One hundred two less six?
 Thirteen less six?
 Twenty-three less six?
 Thirty-three less six?
 Forty-three less six?
 Fifty-three less six?
 Sixty-three less six?
 Seventy-three less six?
 Eighty-three less six?
 Ninety-three less six?
 One hundred three less six?

How many are:

Fourteen less six?
 Twenty-four less six?
 Thirty-four less six?
 Forty-four less six?
 Fifty-four less six?
 Sixty-four less six?
 Seventy-four less six?
 Eighty-four less six?
 Ninety-four less six?
 One hundred four less six?
 Fifteen less six?
 Twenty-five less six?
 Thirty-five less six?
 Forty-five less six?
 Fifty-five less six?
 Sixty-five less six?
 Seventy-five less six?
 Eighty-five less six?
 Ninety-five less six?
 One hundred five less six?
 Ninety-one less six?
 Eighty-two less six?
 Seventy-three less six?
 Sixty-four less six?
 Forty-four less six?
 Thirty-three less six?
 Fifty-five less six?
 Twenty-one less six?
 Eleven less six?
 Thirteen less six?

LESSON IV.

1. With coal worth \$6 a ton, what is the cost of 3 tons ? Of 5 tons ? Of 7 tons ? Of 9 tons ?

SUGGESTION. — The cost of 3 tons is three times \$6.

2. When oranges are selling at \$6 a box, what must be paid for 4 boxes ? For 8 boxes ? For 12 boxes ?

3. If a boy can earn \$6 a week, how much can he earn in 11 weeks ? In 9 weeks ? In 7 weeks ?

4. If a man saves \$6 each week, how much does he save in 4 weeks ? In 8 weeks ? In 12 weeks ?

5. At \$6 a pair, what is the cost of 2 times 6 pairs of shoes ?

6. At \$6 a suit, what is the cost of 3 suits of clothes ?

7. At \$6 a barrel, how many barrels of flour can be bought for \$12 ? For \$18 ? For \$24 ? For \$30 ?

SUGGESTION. — As many barrels of flour can be bought for \$12 as there are 6's in 12.

8. At \$6 a cord for wood, how many cords can be bought for \$60 ? For \$48 ? For \$72 ? For \$66 ?

9. A grocer paid \$30 for 6 barrels of flour. What was the price he paid per barrel ?

SUGGESTION. — The price per barrel was $\frac{1}{6}$ of \$30.

10. A railroad train ran 120 miles in 6 hours. What was the speed per hour ?

11. Six cows sold for \$180. What was the average selling price per cow ?

12. How many sheep at \$5 a head can be bought for \$50 ? For \$100 ? For \$150 ?

13. How many barrels of apples at \$4 a barrel can be bought for \$24 ? For \$240 ? For \$36 ? For \$360 ?

14. What is the cost of $\frac{1}{6}$ of 72 oranges at 5 cents apiece ?

LESSON V.

1. How many days are twice seven days ?
2. How many hours are three times seven hours ?
3. How many minutes are four times seven minutes ?
4. How many seconds are five times seven seconds ?
5. How many weeks are six times seven weeks ?
6. How many months are seven times seven months ?
7. How many years are eight times seven years ?
8. How many miles are nine times seven miles ?
9. How many rods are ten times seven rods ?
10. How many yards are eleven times seven yards ?
11. How many feet are twelve times seven feet ?
12. How many 7's are there in 42 ? In 28 ? In 35 ?
In 21 ? In 14 ? In 56 ?
13. How many 7's are there in 63 ? In 84 ? In 70 ?
In 49 ? In 77 ? In 140 ?
14. What is $\frac{1}{4}$ of 14 pecks ? Of 21 feet ? Of 35 weeks ?
15. What is $\frac{1}{4}$ of 49 days ? Of 56 sheep ? Of 42 oxen ?
16. What is $\frac{1}{4}$ of 84 knives ? Of 70 spoons ? Of 63 cups ?
17. How many days are there in 3 weeks ? In 5 weeks ?
In 7 weeks ?
18. How many days are there in 7 weeks ? In 9 weeks ?
In 8 weeks ?
19. How many weeks are there in 35 days ? In 70 days ?
In 63 days ?
20. How many desks are there in a room with 8 rows,
there being 7 desks in a row ?
21. Eleven boys have each 7 marbles. How many more
marbles have six of the boys than the other five ?
22. With 7 eggs in each of 9 baskets, how many eggs
are there ?
23. With 7 sheep in each of 6 pens, how many sheep
are there ?

8

LESSON VI.

1. How many are four and seven? Fourteen and seven? Twenty-four and seven? Thirty-four and seven? Forty-four and seven? Fifty-four and seven? Sixty-four and seven? Seventy-four and seven? Eighty-four and seven? Ninety-four and seven?

2. How many are five and seven? Fifteen and seven? Twenty-five and seven? Thirty-five and seven? Forty-five and seven? Fifty-five and seven? Sixty-five and seven? Seventy-five and seven? Eighty-five and seven? Ninety-five and seven?

3. How many are six and seven? Sixteen and seven? Twenty-six and seven? Thirty-six and seven? Forty-six and seven? Fifty-six and seven? Sixty-six and seven? Seventy-six and seven? Eighty-six and seven? Ninety-six and seven?

4. How many are seven and seven? Seventeen and seven? Twenty-seven and seven? Thirty-seven and seven? Forty-seven and seven? Fifty-seven and seven? Sixty-seven and seven? Seventy-seven and seven? Eighty-seven and seven? Ninety-seven and seven?

5. How many are eight and seven? Eighteen and seven? Twenty-eight and seven? Thirty-eight and seven? Forty-eight and seven? Fifty-eight and seven? Sixty-eight and seven? Seventy-eight and seven? Eighty-eight and seven? Ninety-eight and seven?

6. How many are nine and seven? Nineteen and seven? Twenty-nine and seven? Thirty-nine and seven? Forty-nine and seven? Fifty-nine and seven? Sixty-nine and seven? Seventy-nine and seven? Eighty-nine and seven? Ninety-nine and seven? Fifty-eight and seven? Seventy-eight and seven? Ninety-eight and seven? Twenty-eight and seven?

LESSON VII.

How many are:

Eleven less seven ?
Twenty-one less seven ?
Thirty-one less seven ?
Forty-one less seven ?
Fifty-one less seven ?
Sixty-one less seven ?
Seventy-one less seven ?
Eighty-one less seven ?
Ninety-one less seven ?
One hundred one less seven ?
Twelve less seven ?
Twenty-two less seven ?
Thirty-two less seven ?
Forty-two less seven ?
Fifty-two less seven ?
Sixty-two less seven ?
Seventy-two less seven ?
Eighty-two less seven ?
Ninety-two less seven ?
One hundred two less seven ?
Thirteen less seven ?
Twenty-three less seven ?
Thirty-three less seven ?
Forty-three less seven ?
Fifty-three less seven ?
Sixty-three less seven ?
Seventy-three less seven ?
Eighty-three less seven ?
Ninety-three less seven ?
One hundred three less seven ?

How many are:

Fourteen less seven ?
Twenty-four less seven ?
Thirty-four less seven ?
Forty-four less seven ?
Fifty-four less seven ?
Sixty-four less seven ?
Seventy-four less seven ?
Eighty-four less seven ?
Ninety-four less seven ?
One hundred four less seven ?
Fifteen less seven ?
Twenty-five less seven ?
Thirty-five less seven ?
Forty-five less seven ?
Fifty-five less seven ?
Sixty-five less seven ?
Seventy-five less seven ?
Eighty-five less seven ?
Ninety-five less seven ?
One hundred five less seven ?
Sixteen less seven ?
Twenty-six less seven ?
Thirty-six less seven ?
Forty-six less seven ?
Fifty-six less seven ?
Sixty-six less seven ?
Seventy-six less seven ?
Eighty-six less seven ?
Ninety-six less seven ?
One hundred six less seven ?

LESSON VIII.

How many are:	What is $\frac{1}{8}$ of:	How many 8's:
Two 8's ?	24 gills ?	In 80 ?
Three 8's ?	16 pints ?	In 16 ?
Four 8's ?	32 quarts ?	In 160 ?
Five 8's ?	48 gallons ?	In 24 ?
Six 8's ?	40 pecks ?	In 240 ?
Seven 8's ?	56 quarts ?	In 32 ?
Eight 8's ?	72 gallons ?	In 48 ?
Nine 8's ?	64 pints ?	In 72 ?
Ten 8's ?	80 pecks ?	In 88 ?
Eleven 8's ?	96 quarts ?	In 96 ?
Twelve 8's ?	88 bushels ?	In 56 ?

1. There are 8 quarts in a peck. How many quarts are there in 3 pecks ? In 5 pecks ? In 7 pecks ?

2. How many pecks in 64 quarts ? In 16 quarts ? In 32 quarts ?

3. How many horses are three times 8 horses, and four times 4 horses ?

4. If $\frac{1}{8}$ of a quantity of butter is worth \$8, how much is $\frac{3}{8}$ of the quantity worth ?

5. If $\frac{3}{8}$ of a quantity of coal is worth \$24, how much is $\frac{1}{8}$ of the quantity worth ?

6. How many desks are there in 7 rows of 8 desks each ?

7. The seating capacity of a schoolroom is 64 desks. There are as many rows as there are seats in a row. How many rows are there, and how many seats in a row ?

8. Each of twelve boys has 8 marbles. How many more marbles have seven of the boys than the other five ?

9. How many pupils are there in a room, with three rows of boys and four rows of girls, there being 8 desks in a row ?

9

LESSON IX.

1. How many are three and eight? Thirteen and eight? Twenty-three and eight? Thirty-three and eight? Forty-three and eight? Fifty-three and eight? Sixty-three and eight? Seventy-three and eight? Eighty-three and eight?

2. How many are four and eight? Fourteen and eight? Twenty-four and eight? Thirty-four and eight? Forty-four and eight? Fifty-four and eight? Sixty-four and eight? Seventy-four and eight? Eighty-four and eight?

3. How many are five and eight? Fifteen and eight? Twenty-five and eight? Thirty-five and eight? Forty-five and eight? Fifty-five and eight? Sixty-five and eight? Seventy-five and eight? Eighty-five and eight?

4. How many are six and eight? Sixteen and eight? Twenty-six and eight? Thirty-six and eight? Forty-six and eight? Fifty-six and eight? Sixty-six and eight? Seventy-six and eight? Eighty-six and eight? Ninety-six and eight?

5. How many are seven and eight? Seventeen and eight? Twenty-seven and eight? Thirty-seven and eight? Forty-seven and eight? Fifty-seven and eight? Sixty-seven and eight? Seventy-seven and eight? Eighty-seven and eight? Ninety-seven and eight?

6. How many are eight and eight? Eighteen and eight? Twenty-eight and eight? Thirty-eight and eight? Forty-eight and eight? Fifty-eight and eight? Sixty-eight and eight? Seventy-eight and eight? Eighty-eight and eight? Ninety-eight and eight?

7. How many are nine and eight? Nineteen and eight? Twenty-nine and eight? Thirty-nine and eight? Forty-nine and eight? Fifty-nine and eight? Sixty-nine and eight? Seventy-nine and eight? Eighty-nine and eight? Ninety-nine and eight?

LESSON X.

How many are :

Eleven less eight ?
Twenty-one less eight ?
Thirty-one less eight ?
Forty-one less eight ?
Fifty-one less eight ?
Sixty-one less eight ?
Seventy-one less eight ?
Eighty-one less eight ?
Ninety-one less eight ?
One hundred one less eight ?
Twelve less eight ?
Twenty-two less eight ?
Thirty-two less eight ?
Forty-two less eight ?
Fifty-two less eight ?
Sixty-two less eight ?
Seventy-two less eight ?
Eighty-two less eight ?
Ninety-two less eight ?
One hundred two less eight ?
Thirteen less eight ?
Twenty-three less eight ?
Thirty-three less eight ?
Forty-three less eight ?
Fifty-three less eight ?
Sixty-three less eight ?
Seventy-three less eight ?
Eighty-three less eight ?
Ninety-three less eight ?
One hundred three less eight ?

How many are :

Fourteen less eight ?
Twenty-four less eight ?
Thirty-four less eight ?
Forty-four less eight ?
Fifty-four less eight ?
Sixty-four less eight ?
Seventy-four less eight ?
Eighty-four less eight ?
Ninety-four less eight ?
One hundred four less eight ?
Fifteen less eight ?
Twenty-five less eight ?
Thirty-five less eight ?
Forty-five less eight ?
Fifty-five less eight ?
Sixty-five less eight ?
Seventy-five less eight ?
Eighty-five less eight ?
Ninety-five less eight ?
One hundred five less eight ?
Sixty-six less eight ?
Seventy-six less eight ?
Eighty-six less eight ?
Ninety-six less eight ?
One hundred six less eight ?
Sixteen less eight ?
Twenty-six less eight ?
Thirty-six less eight ?
Forty-six less eight ?
Fifty-six less eight ?

LESSON XI.

How many are: What is $\frac{1}{9}$ of: How many 9's:

Two 9's ?	18 square yards ?	In 36 ?
Three 9's ?	27 cubic yards ?	In 63 ?
Four 9's ?	36 square feet ?	In 54 ?
Five 9's ?	45 cubic feet ?	In 45 ?
Six 9's ?	54 square inches ?	In 72 ?
Seven 9's ?	63 cubic inches ?	In 27 ?
Eight 9's ?	72 square miles ?	In 99 ?
Nine 9's ?	81 acres ?	In 90 ?
Ten 9's ?	90 square rods ?	In 81 ?
Eleven 9's ?	99 tons of hay ?	In 18 ?
Twelve 9's ?	108 tons of coal ?	In 108 ?

- How many apples are $\frac{2}{3}$ of 45 apples ? $\frac{2}{3}$? $\frac{5}{6}$?
- How many oranges are $\frac{3}{4}$ of 54 oranges ? $\frac{3}{4}$? $\frac{7}{8}$?
- How many yards are $\frac{1}{3}$ of 18 yards ? $\frac{2}{3}$? $\frac{5}{6}$?
- How many feet are $\frac{2}{3}$ of 63 feet ? $\frac{1}{3}$? $\frac{7}{9}$?
- How many gallons are $\frac{2}{3}$ of 72 gallons ? $\frac{2}{3}$? $\frac{4}{9}$?
- How many quarts are $\frac{2}{3}$ of 81 quarts ? $\frac{2}{3}$? $\frac{5}{9}$?
- How many inches are $\frac{2}{3}$ of 90 inches ? $\frac{1}{3}$? $\frac{2}{9}$?
- A square yard is 9 square feet ? Two square yards are how many square feet ? 4 square yards ? 7 square yards ? 12 square yards ?
- How many square yards are 18 square feet ? 36 square feet ? 54 square feet ? 72 square feet ?
- How many square yards are 45 square feet ? 108 square feet ? 63 square feet ? 81 square feet ?
- If 9 men can do a piece of work in 7 days, how long will it take one man to do it ? How many men can do it in one day ?
- Each of eight boys has 9 marbles. How many more marbles have five of the boys than the other three ?

LESSON XII.

1. How many are two and nine? Twelve and nine? Twenty-two and nine? Thirty-two and nine? Forty-two and nine? Fifty-two and nine? Sixty-two and nine? Seventy-two and nine? Eighty-two and nine?

2. How many are three and nine? Thirteen and nine? Twenty-three and nine? Thirty-three and nine? Forty-three and nine? Fifty-three and nine? Sixty-three and nine? Seventy-three and nine? Eighty-three and nine?

3. How many are four and nine? Fourteen and nine? Twenty-four and nine? Thirty-four and nine? Forty-four and nine? Fifty-four and nine? Sixty-four and nine? Seventy-four and nine? Eighty-four and nine?

4. How many are five and nine? Fifteen and nine? Twenty-five and nine? Thirty-five and nine? Forty-five and nine? Fifty-five and nine? Sixty-five and nine? Seventy-five and nine? Eighty-five and nine?

5. How many are six and nine? Sixteen and nine? Twenty-six and nine? Thirty-six and nine? Forty-six and nine? Fifty-six and nine? Sixty-six and nine? Seventy-six and nine? Eighty-six and nine? Ninety-six and nine?

6. How many are seven and nine? Seventeen and nine? Twenty-seven and nine? Thirty-seven and nine? Forty-seven and nine? Fifty-seven and nine? Sixty-seven and nine? Seventy-seven and nine? Eighty-seven and nine?

7. How many are eight and nine? Eighteen and nine? Twenty-eight and nine? Thirty-eight and nine? Forty-eight and nine? Fifty-eight and nine? Sixty-eight and nine? Seventy-eight and nine? Eighty-eight and nine?

8. How many are nine and nine? Nineteen and nine? Twenty-nine and nine? Thirty-nine and nine? Forty-nine and nine? Fifty-nine and nine? Sixty-nine and nine? Seventy-nine and nine? Eighty-nine and nine?

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LESSON XIII.

How many are :

Eleven less nine ?
Twenty-one less nine ?
Thirty-one less nine ?
Forty-one less nine ?
Fifty-one less nine ?
Sixty-one less nine ?
Seventy-one less nine ?
Eighty-one less nine ?
Ninety-one less nine ?
One hundred one less nine ?
Twelve less nine ?
Twenty-two less nine ?
Thirty-two less nine ?
Forty-two less nine ?
Fifty-two less nine ?
Sixty-two less nine ?
Seventy-two less nine ?
Eighty-two less nine ?
Ninety-two less nine ?
One hundred two less nine ?
Thirteen less nine ?
Twenty-three less nine ?
Thirty-three less nine ?
Forty-three less nine ?
Fifty-three less nine ?
Sixty-three less nine ?
Seventy-three less nine ?
Eighty-three less nine ?
Ninety-three less nine ?
One hundred three less nine ?

How many are :

Fourteen less nine ?
Twenty-four less nine ?
Thirty-four less nine ?
Forty-four less nine ?
Fifty-four less nine ?
Sixty-four less nine ?
Seventy-four less nine ?
Eighty-four less nine ?
Ninety-four less nine ?
One hundred four less nine ?
Fifteen less nine ?
Twenty-five less nine ?
Thirty-five less nine ?
Forty-five less nine ?
Fifty-five less nine ?
Sixty-five less nine ?
Seventy-five less nine ?
Eighty-five less nine ?
Ninety-five less nine ?
One hundred five less nine ?
Sixteen less nine ?
Twenty-six less nine ?
Thirty-six less nine ?
Forty-six less nine ?
Fifty-six less nine ?
Sixty-six less nine ?
Seventy-six less nine ?
Eighty-six less nine ?
Ninety-six less nine ?
One hundred six less nine ?

LESSON XIV.

How many are :	What is $\frac{1}{10}$ of :	How many 10's :
Two 10's ?	20 cents ?	In 10 ?
Three 10's ?	40 nickels ?	In 100 ?
Four 10's ?	60 dimes ?	In 20 ?
Five 10's ?	80 dollars ?	In 200 ?
Six 10's ?	100 25-cent coins ?	In 30 ?
Seven 10's ?	120 50-cent coins ?	In 300 ?
Eight 10's ?	110 city bonds ?	In 40 ?
Nine 10's ?	90 2-cent stamps ?	In 400 ?
Ten 10's ?	70 1-cent stamps ?	In 50 ?
Eleven 10's ?	50 5-cent stamps ?	In 500 ?
Twelve 10's ?	30 10-cent stamps ?	In 1000 ?

1. One cent is what part of a dime ? Three cents ?
Seven cents ? Nine cents ?
2. One dime is what part of a dollar ? Two dimes ?
Four dimes ? Six dimes ?
3. At 10 cents a dozen, what is the cost of 2 dozen eggs ?
4. At \$10 a ton, what is the cost of 12 tons of coal ?
5. 110 sheep are how many times 10 sheep ?
6. 20 one-dollar bills are equal to how many ten-dollar bills ?
7. 40 two-dollar bills are equal to how many ten-dollar bills ?
8. What is the difference in the cost of 12 yards at 4 dimes a yard, and 11 yards at 5 dimes a yard ?
9. A score is 20. How many 10's make a score ? How old is a man whose age is 2 score years and 10 ?
10. How old is a man whose age is 3 score years and 10 ?
4 score years ? 4 score years and 10 ?
11. 10¢ is what part of 100¢ ? 50¢ is what part of 100¢ ?
12. 20¢ is what part of 100¢ ? 75¢ is what part of 100¢ ?

LESSON XV.

How many are : What is $\frac{1}{11}$ of : How many 11's :

Two 11's ?	22 ?	In 33 ?
Three 11's ?	44 ?	In 66 ?
Four 11's ?	66 ?	In 77 ?
Five 11's ?	88 ?	In 44 ?
Six 11's ?	110 ?	In 88 ?
Seven 11's ?	132 ?	In 22 ?
Eight 11's ?	33 ?	In 121 ?
Nine 11's ?	55 ?	In 99 ?
Ten 11's ?	77 ?	In 132 ?
Eleven 11's ?	99 ?	In 110 ?
Twelve 11's ?	121 ?	In 55 ?

Compare :

Two 11's with eleven 2's.
 Three 11's with eleven 3's.
 Four 11's with six 7's.
 Five 11's with nine 6's.
 Six 11's with seven 9's.

Compare :

Seven 11's with ten 8's.
 Eight 11's with nine 10's.
 Nine 11's with ten 10's.
 Ten 11's with eleven 5's.
 Eleven 11's with six 20's.

How many are :

Two 11's and 8 ?
 Three 11's and 7 ?
 Five 11's and 5 ?
 Seven 11's and 3 ?
 Four 11's and 6 ?

How many are :

Eight 11's and 2 ?
 Ten 11's and 10 ?
 Twelve 11's and 8 ?
 Eleven 11's and 9 ?
 Six 11's and 4 ?

1. How many cords of wood in 5 piles of 11 cords each ?
2. How many tons of coal in 7 bins of 11 tons each ?
3. How many times 11 tons are 132 tons ?
4. How many times \$11 are \$121 ?
5. How many 11's are there in 110 ? In 220 ?
6. What is $\frac{1}{11}$ of 33 feet ? Of 55 yards ? Of 77 rods ?

LESSON XVI.

How many are :	What is $\frac{1}{12}$ of :	How many 12's :
Two 12's ?	24 ?	In 24 ?
Three 12's ?	36 ?	In 48 ?
Four 12's ?	48 ?	In 36 ?
Five 12's ?	60 ?	In 72 ?
Six 12's ?	72 ?	In 60 ?
Seven 12's ?	84 ?	In 120 ?
Eight 12's ?	96 ?	In 84 ?
Nine 12's ?	108 ?	In 132 ?
Ten 12's ?	110 ?	In 96 ?
Eleven 12's ?	132 ?	In 108 ?
Twelve 12's ?	144 ?	In 144 ?

Compare :

How many are :

Two 12's with twelve 2's.	Twelve 12's less two 10's ?
Two 12's with three 8's.	Ten 12's less three 10's ?
Three 12's with four 9's.	Nine 12's less 8 and 10 ?
Four 12's with six 8's.	Six 12's less 2 and 10 ?
Three 12's with nine 4's.	Seven 12's less 4 and 10 ?
Five 12's with three 20's.	Five 12's less five 10's ?
Six 12's with eight 9's.	Eleven 12's less three 10's and 2 ?
Seven 12's with nine 9's.	Two 12's less 9 ?
Eight 12's with twelve 8's.	Three 12's less 7 ?
Nine 12's with eleven 10's.	Four 12's less three 6's ?

1. There are 12 units in a dozen. How many dozen lemons are 60 lemons ? 24 lemons ? 96 lemons ? 84 lemons ?
2. How many dozen eggs are 36 eggs ? 72 eggs ?
3. A man bought 5 dozen lemons at 2 cents a lemon. What did he pay for them ?
4. A square foot is 12 times 12 square inches. How many square inches equal a square foot ?

LESSON XVII.

Compare :

Three 5's with two 6's.
 Nine 2's with seven 3's.
 Eight 3's with twelve 2's.
 Six 5's with four 8's.
 Seven 4's with nine 3's.
 Eleven 3's with eight 4's.
 Seven 5's with six 7's.
 Nine 3's with four 7's.
 Nine 5's with six 8's.
 Twelve 4's with ten 5's.
 Eleven 5's with seven 7's.
 Eight 5's with six 6's.
 Five 7's with six 6's.
 Five 9's with six 8's.
 Four 9's with five 7's.
 Eight 6's with nine 5's.
 Twelve 6's with nine 8's.
 Twelve 7's with ten 8's.

Compare :

Eleven 7's with eight 9's.
 Nine 6's with eleven 5's.
 Eight 7's with twelve 5's.
 Seven 8's with nine 6's.
 Five 12's with seven 9's.
 Eleven 11's with nine 12's.
 $\frac{1}{2}$ of 20 with $\frac{1}{3}$ of 30.
 $\frac{1}{3}$ of 27 with $\frac{1}{4}$ of 28.
 $\frac{1}{3}$ of 33 with $\frac{1}{9}$ of 81.
 $\frac{1}{4}$ of 32 with $\frac{1}{6}$ of 30.
 $\frac{2}{3}$ of 18 with $\frac{1}{4}$ of 24.
 $\frac{2}{3}$ of 21 with $\frac{1}{2}$ of 30.
 $\frac{1}{4}$ of 48 with $\frac{1}{3}$ of 36.
 $\frac{3}{4}$ of 24 with $\frac{2}{3}$ of 12.
 $\frac{3}{4}$ of 16 with $\frac{2}{3}$ of 9.
 $\frac{1}{3}$ of 45 with $\frac{1}{4}$ of 42.
 $\frac{1}{3}$ of 54 with $\frac{1}{5}$ of 81.
 $\frac{1}{7}$ of 56 with $\frac{1}{11}$ of 55.

1. How many are eight, seven, and five, less six ?
2. How many are seven, nine, and six, less eight ?
3. How many are five, six, and eight, less seven ?
4. How many are nine, four, and eight, less three ?
5. How many are six, eleven, and five, less nine ?
6. How many are twelve, eleven, and eight, less nine ?
7. How many are nine, seven, and five, less six ?
8. How many are three 9's less $\frac{1}{3}$ of 18 ?
9. How many are four 8's less $\frac{1}{4}$ of 36 ?
10. How many are five 7's less $\frac{1}{5}$ of 40 ?
11. How many are six 11's less $\frac{1}{6}$ of 54 ?
12. How many are seven 12's less $\frac{1}{7}$ of 49 ?

LESSON XVIII.

1. At \$ 12 a ton, what is the cost of 9 tons of hay ?
2. What is the cost of 7 barrels of flour, at $\frac{1}{4}$ of \$ 42 a barrel ?
3. If 8 men can do a piece of work in 6 days, in how many days can one man do it ?
4. If 2 barrels of flour last 7 persons 3 months, how long do 4 barrels last one person ?
5. How many dollars will buy 9 tons of hay, at \$ 12 a ton ?
6. Name the cost of 12 barrels of pork, at \$ 11 a barrel ?
7. A quantity of food will last 7 men 9 days. How long will it last one man ?
8. At \$ 12 a hundred, what is the price of 7 hundred cedar posts ? Of 9 hundred ? Of 11 hundred ?
9. A farmer has enough oats to fill 6 bins, each holding 8 bushels. How many bushels of oats has he ?
10. What is the cost of 12 pounds of coffee, at the rate of 3 pounds for \$ 1 ?
11. In an orchard of pear and apple trees, there are 9 pear trees, and 8 times as many apple trees. How many trees are there in the orchard ?
12. In an orchard of peach and cherry trees, there are 12 peach trees and 6 times as many cherry trees. How many trees are there in the orchard ?
13. How many sheep are there in 11 pens, there being 12 sheep in each pen ?
14. What is the cost of 9 thousand feet of boards, at \$ 12 a thousand ?
15. John is 8 years old, and is $\frac{1}{4}$ as old as his father. What is the sum of their ages ?
16. At 30 cents a bushel, what is the cost of 8 bushels of oats ?

LESSON XIX.

1. In an orchard of 72 trees there are 8 rows. How many trees are there in a row?

2. A farmer has 84 bushels of potatoes in 7 bins? How many potatoes has he in each bin?

3. A man traveled 72 miles in 12 hours. What was the rate per hour?

4. If 108 cents are paid for 9 dozen eggs, what is the price per dozen?

5. How long should it take 12 men to do the work of 8 men working 9 days?

6. How many sheep at \$7 a head can be bought for \$63? For \$84? For \$140?

7. If 8 men receive \$96 for a piece of work, and share the amount equally, what amount does each man receive?

8. At \$7 a ton, how many tons of coal can be bought for \$49? For \$56? For \$63? For \$84?

9. If 8 barrels of flour cost \$54, what is the cost of 9 barrels? Of 11 barrels? Of 20 barrels?

10. If 9 weeks' board amounts to \$45, how much does 7 weeks' board cost?

11. At the rate of 48 miles in 6 hours, how long would it take to travel 72 miles?

12. At the rate of 12 dozen for 120 cents, what is the cost of 15 dozen eggs?

13. If 3 melons cost 60 cents, how many melons can be bought for \$1?

14. If 7 pounds of beef cost 56 cents, how many pounds will 42 cents buy?

15. If 12 bushels of wheat make 3 barrels of flour, how many bushels make 7 barrels?

16. If a quantity of provisions serves 6 men for 12 days, how long would it serve 4 men for the same time?

LESSON XX.

1. At the rate of 3 apples for 5 cents, what is the cost of 6 apples? Of 9 apples? Of 12 apples?

ANALYSIS. — 6 apples are twice 3 apples, and cost twice 5 cents.

2. What is the cost of 5 pictures, if 15 pictures cost \$24?

3. If 6 hats cost \$11, what is the cost of 18 hats?

4. If 36 books cost \$20, how much should be paid for 9 books?

5. If 3 boxes of berries cost 25 cents, what is the cost of 12 boxes?

6. At \$6 a head, how much do $\frac{1}{3}$ of 18 sheep cost?

7. At \$3 each, how much do $\frac{2}{3}$ of 24 clocks cost?

8. How much do 3 dozen lemons cost, at the rate of 6 lemons for 10 cents?

9. If you can buy 6 pencils for 5 cents, how many pencils can you buy for 15 cents? For 24 cents?

10. If 6 cents is paid for 5 pencils, how much do 20 pencils cost? 30 pencils? 40 pencils? 50 pencils?

11. What is the cost of $\frac{1}{4}$ of 54 cords of wood, at $\frac{1}{3}$ of \$18 a cord?

12. How many yards of cloth can be bought for \$15, if 3 yards cost \$5?

13. If 3 barrels of flour cost \$12, what is the cost of 2 barrels? Of 4 barrels? Of 6 barrels?

14. If a quantity of butter can be bought for \$42, for how much can $\frac{1}{3}$ of the quantity be bought? $\frac{2}{3}$? $\frac{3}{4}$? $\frac{5}{6}$?

15. How many cents are there in 6 five-cent nickels? In 6 dimes? In \$6?

16. If the interest of \$6 is 48 cents, what is the interest of \$3? Of \$2?

17. A quantity of sugar is worth $\frac{1}{4}$ of \$50. What is the whole cost?

LESSON XXI.

1. How many 6's in 12? What part of 12 is 6?
2. If 12 oranges cost 50 cents, how much do 6 oranges cost?
3. How many 6's in 18? What part of 18 is 6?
4. If 18 apples cost 15 cents, what is the cost of 6 apples? Of 12 apples?
5. How many 6's in 24? What part of 24 is 6?
6. If 24 penholders cost 20 cents, what is the cost of 6 penholders? Of 12? Of 18?
7. How many 6's in 30? What part of 30 is 6?
8. If 30 apples cost 25 cents, what is the cost of 6 apples? Of 12? Of 18? Of 24?
9. What is the relation of 6 to 36? Of 12 to 36? Of 30 to 36?

OBSERVATION. — The relation of 30 to 36 is the relation of 5 sixes to 6 sixes. Hence it is the relation of 5 to 6, or $\frac{5}{6}$.

10. The cost of 6 oranges is what part of the cost of 36 oranges?

11. Let the cost of 36 oranges be 72 cents. What, then, is the cost of 6 oranges? Of 12 oranges? Of 18 oranges?

12. What is the relation of 18 to 12?

OBSERVATION. — The relation of 18 to 12 is the relation of 3 sixes to 2 sixes. Hence, it is the relation of 3 to 2, or $\frac{3}{2}$.

13. If 12 apples cost 10 cents, what is the cost of 18 apples?

ANALYSIS. — 18 apples are $\frac{3}{2}$ of 12 apples and cost $\frac{3}{2}$ of 10 cents; $\frac{3}{2}$ of 10 cents are 15 cents.

14. What is the relation of 24 to 18? Of 30 to 24?
15. The cost of 18 pens is 12 cents. What is the cost of 24 pens?
16. The cost of 24 pens is 20 cents. What is the cost of 18 pens?

LESSON XXII.

6 - 1	24 - 4	42 - 7	60 - 10
12 - 2	30 - 5	48 - 8	66 - 11
18 - 3	36 - 6	54 - 9	72 - 12

6 is $\frac{1}{2}$ of what number?	12 is $\frac{2}{3}$ of what number?
12 is 2 times what number?	18 is $\frac{3}{4}$ of what number?
12 is $\frac{2}{3}$ of what number?	24 is $\frac{4}{5}$ of what number?
18 is 3 times what number?	30 is $\frac{5}{6}$ of what number?
18 is $\frac{3}{4}$ of what number?	36 is $\frac{6}{7}$ of what number?
12 is $\frac{3}{4}$ of what number?	42 is 7 times what number?
18 is $\frac{3}{2}$ of what number?	42 is $\frac{7}{8}$ of what number?
24 is 4 times what number?	42 is $\frac{7}{6}$ of what number?
24 is $\frac{4}{5}$ of what number?	42 is $\frac{7}{4}$ of what number?
24 is $\frac{4}{3}$ of what number?	42 is $\frac{7}{5}$ of what number?
12 is $\frac{2}{5}$ of what number?	42 is $\frac{7}{6}$ of what number?
18 is $\frac{3}{5}$ of what number?	12 is $\frac{3}{8}$ of what number?
24 is $\frac{4}{5}$ of what number?	18 is $\frac{3}{2}$ of what number?
30 is 5 times what number?	18 is $\frac{3}{4}$ of what number?
30 is $\frac{5}{2}$ of what number?	24 is $\frac{4}{5}$ of what number?
30 is $\frac{5}{3}$ of what number?	24 is $\frac{4}{6}$ of what number?
30 is $\frac{5}{4}$ of what number?	30 is $\frac{5}{4}$ of what number?
12 is $\frac{2}{6}$ of what number?	30 is $\frac{5}{6}$ of what number?
18 is $\frac{3}{6}$ of what number?	36 is $\frac{6}{5}$ of what number?
24 is $\frac{4}{6}$ of what number?	36 is $\frac{6}{7}$ of what number?
30 is $\frac{5}{6}$ of what number?	42 is $\frac{7}{6}$ of what number?
36 is 6 times what number?	42 is $\frac{7}{8}$ of what number?
36 is $\frac{6}{2}$ of what number?	48 is $\frac{8}{7}$ of what number?
36 is $\frac{6}{3}$ of what number?	54 is $\frac{9}{10}$ of what number?
36 is $\frac{6}{4}$ of what number?	60 is $\frac{10}{9}$ of what number?
36 is $\frac{6}{5}$ of what number?	60 is $\frac{11}{10}$ of what number?
6 is $\frac{1}{4}$ of what number?	66 is $\frac{11}{10}$ of what number?

LESSON XXIII.

1. How many 7's in 14? What part of 14 is 7?
2. If 14 pounds of maple sugar cost one dollar, what should be the price of 7 pounds?
3. How many 7's in 21? What part of 21 is 7?
4. If 21 lemons cost 60 cents, what is the cost of 7 lemons? Of 14 lemons?
5. How many 7's in 28? What part of 28 is 7?
6. If 28 yards of carpet cost \$32, what is the price of 7 yards? Of 14 yards? Of 21 yards?
7. What is $\frac{1}{4}$ of 32? What is $\frac{1}{2}$ of 32?
8. How many 7's in 35? What part of 35 is 7?
9. If \$60 is the price paid for 35 books, how much should be paid for 7 books? For 14 books? For 21 books?
10. What is $\frac{1}{3}$ of \$60? $\frac{2}{3}$ of \$60? $\frac{1}{4}$ of \$60? $\frac{3}{4}$ of \$60?
11. How many 7's in 42? What is the relation of 7 to 42?
12. If 42 yards of cloth cost \$66, what is the price of 7 yards? Of 14 yards? Of 21 yards?
13. What is $\frac{1}{3}$ of \$66? $\frac{2}{3}$ of 66?
14. What is the relation of 14 to 21? Of 21 to 14?
15. If 21 marbles cost 15 cents, what is the cost of 14 marbles? What is $\frac{2}{3}$ of 15 cents?
16. If 14 marbles cost 18 cents, what is the cost of 21 marbles? What is $\frac{3}{2}$ of 18 cents?
17. At the rate of 4 apples for 7 cents, what is the cost of 8 apples? 20 apples? 32 apples?
18. At the rate of 5 pencils for 7 cents, what is the cost of 35 pencils? How many pencils can be bought for 63 cents?
19. What is the relation of one day to one week? What is the relation of one week to one day?

LESSON XXIV.

7 - 1	28 - 4	49 - 7	70 - 10
14 - 2	35 - 5	56 - 8	77 - 11
21 - 3	42 - 6	63 - 9	84 - 12

7 is $\frac{1}{2}$ of what number?
 14 is 2 times what number?
 7 is $\frac{1}{3}$ of what number?
 14 is $\frac{2}{3}$ of what number?
 21 is $\frac{3}{2}$ of what number?
 7 is $\frac{1}{4}$ of what number?
 14 is $\frac{1}{2}$ of what number?
 21 is $\frac{3}{4}$ of what number?
 28 is $\frac{1}{2}$ of what number?
 28 is $\frac{4}{5}$ of what number?
 14 is $\frac{2}{5}$ of what number?
 21 is $\frac{3}{5}$ of what number?
 28 is $\frac{4}{5}$ of what number?
 35 is 5 times what number?
 35 is $\frac{5}{2}$ of what number?
 35 is $\frac{5}{3}$ of what number?
 35 is $\frac{5}{4}$ of what number?
 14 is $\frac{2}{5}$ of what number?
 21 is $\frac{3}{5}$ of what number?
 28 is $\frac{4}{5}$ of what number?
 35 is $\frac{5}{2}$ of what number?
 42 is $\frac{6}{5}$ of what number?
 42 is $\frac{4}{3}$ of what number?
 42 is $\frac{5}{3}$ of what number?
 42 is $\frac{5}{4}$ of what number?
 14 is $\frac{2}{3}$ of what number?
 21 is $\frac{3}{2}$ of what number?

28 is $\frac{4}{5}$ of what number?
 35 is $\frac{5}{2}$ of what number?
 42 is $\frac{6}{5}$ of what number?
 49 is 7 times what number?
 49 is $\frac{7}{2}$ of what number?
 49 is $\frac{7}{3}$ of what number?
 49 is $\frac{7}{4}$ of what number?
 49 is $\frac{7}{5}$ of what number?
 49 is $\frac{7}{6}$ of what number?
 7 is $\frac{1}{10}$ of what number?
 14 is $\frac{2}{10}$ of what number?
 21 is $\frac{3}{10}$ of what number?
 28 is $\frac{4}{10}$ of what number?
 35 is $\frac{5}{10}$ of what number?
 42 is $\frac{6}{10}$ of what number?
 49 is $\frac{7}{10}$ of what number?
 56 is $\frac{8}{10}$ of what number?
 63 is $\frac{9}{10}$ of what number?
 77 is $\frac{11}{10}$ of what number?
 14 is $\frac{2}{3}$ of what number?
 21 is $\frac{3}{2}$ of what number?
 21 is $\frac{3}{4}$ of what number?
 28 is $\frac{4}{3}$ of what number?
 28 is $\frac{4}{5}$ of what number?
 35 is $\frac{5}{4}$ of what number?
 35 is $\frac{5}{6}$ of what number?
 42 is $\frac{6}{5}$ of what number?

LESSON XXV.

8 is $\frac{1}{2}$ of what number?	8 is $\frac{1}{3}$ of what number?
8 is $\frac{1}{3}$ of what number?	16 is $\frac{2}{3}$ of what number?
16 is 2 times what number?	24 is $\frac{3}{4}$ of what number?
16 is $\frac{2}{3}$ of what number?	32 is $\frac{4}{5}$ of what number?
24 is 3 times what number?	40 is 5 times what number?
24 is $\frac{3}{2}$ of what number?	40 is $\frac{4}{5}$ of what number?
8 is $\frac{1}{4}$ of what number?	40 is $\frac{5}{6}$ of what number?
16 is $\frac{2}{4}$ of what number?	40 is $\frac{5}{7}$ of what number?
24 is $\frac{3}{4}$ of what number?	40 is $\frac{5}{8}$ of what number?
32 is 4 times what number?	40 is $\frac{5}{9}$ of what number?
32 is $\frac{4}{3}$ of what number?	40 is $\frac{5}{10}$ of what number?
32 is $\frac{4}{5}$ of what number?	

- What number is $\frac{3}{4}$ of 6? 8? 10? 12? 20?
- What number is $\frac{2}{3}$ of 6? 9? 12? 15? 18?
- What number is $\frac{3}{4}$ of 8? 12? 16? 24? 36?
- What number is $\frac{4}{5}$ of 21? 27? 30? 36? 60?
- What number is $\frac{2}{3}$ of 15? 25? 35? 55? 100?
- What number is $\frac{3}{4}$ of 10? 20? 40? 60? 80?
- What number is $\frac{2}{3}$ of 20? 30? 40? 50? 60?
- What number is $\frac{3}{4}$ of 12? 18? 21? 33? 60?
- What number is $\frac{4}{5}$ of 5? 10? 45? 40? 25?
- What number is $\frac{5}{6}$ of 8? 16? 20? 32? 48?
- If 8 lb. cost 12 cents, what is the cost of 48 lb.?
- If 16 lb. cost 24 cents, what is the cost of 8 lb.?
- If 24 lb. cost 20 cents, what is the cost of 16 lb.?
- If 16 lb. cost 18 cents, what is the cost of 24 lb.?
- If 16 lb. cost 30 cents, what is the cost of 40 lb.?
- If $\frac{3}{4}$ of a quantity of coal costs \$8, what should $\frac{5}{6}$ of the quantity cost?
- If $\frac{2}{3}$ of a quantity of corn costs \$6, what should $\frac{4}{5}$ of the quantity cost?

LESSON XXVI.

1. How many 9's in 18? What part of 18 is 9?
2. If 9 cherries cost 4 cents, what is the cost of 18 cherries?
3. If 18 cherries cost 10 cents, what is the cost of 9 cherries?
4. If 18 cherries cost 10 cents, what is the cost of 27 cherries? What is $\frac{3}{2}$ of 10 cents?
5. If 27 yards of carpet cost \$36, what is the cost of 18 yards? What is $\frac{2}{3}$ of \$36?
6. If 36 yards of carpet cost \$44, what is the cost of 9 yards? Of 18 yards? Of 27 yards?
7. What is $\frac{1}{4}$ of \$44? $\frac{3}{4}$ of \$44? $\frac{1}{2}$ of \$44?
8. If 27 yards of silk cost \$30, what is the cost of 36 yards? What is $\frac{4}{3}$ of \$30?
9. At the same price of \$30 for 27 yards, how much would 45 yds. cost? What is $\frac{5}{3}$ of \$30?
10. What is the relation of 63 to 54? Of 63 to 45?
11. What is the relation of 63 to 72? Of 63 to 81?
12. What is the relation of 27 to 45? Of 45 to 27?
13. What is the relation of 45 to 81? Of 81 to 45?
14. What is the relation of 9 to 27? Of 27 to 9?
15. What is the relation of 99 to 108? Of 108 to 99?
16. When 9 turkeys can be bought for \$11, how many turkeys can be bought for \$33? For \$55? For \$77?
17. When 11 chickens can be had for \$7, how much would 44 chickens cost? 66 chickens? 121 chickens?
18. At the rate of 4 for \$9, how many sheep can be bought for \$72?
19. What is the relation of 25¢ to 75¢? Of 75¢ to 25¢?
20. What is the relation of 75¢ to 100¢? Of 100¢ to 75¢?
21. What is the relation of 30¢ to 50¢? Of 50¢ to 30¢?
22. What is the relation of 60¢ to 90¢? Of 90¢ to 60¢?

LESSON XXVII.

1. Two times nine are how many times three?
2. Three times eight are how many times four?
3. Three times five, plus six, are how many times seven?
4. Four times seven, less one, are how many times nine?
5. Four times nine are how many times twelve?
6. Four times twelve are how many times eight?
7. Five times seven, plus seven, are how many times six?
8. Five times twelve are how many 10's?
9. Six times seven are how many 2's?
10. Six times nine, less four, are how many 2's?
11. Six times six are how many times nine?
12. Twelve times twelve, plus six, are how many 10's?
13. Seven times four, plus five, are how many 11's?
14. Seven times seven, less four, are how many 9's?
15. Seven times nine, plus three, are how many 6's?
16. Seven times eight, less two, are how many 9's?
17. Eight times four, plus ten, are how many times seven?
18. Eight times six, plus twelve, are how many times ten?
19. Eight times nine are how many times six?
20. Eight times eleven, less seven, are how many times nine?
21. In 12, how many 2's? 3's? 4's? 6's?
22. In 18, how many 2's? 3's? 6's? 9's?
23. In 24, how many 4's? 6's? 8's? 12's?
24. In 30, how many 3's? 5's? 6's? 10's?
25. In 36, how many 6's? 4's? 9's? 12's?
26. In 40, how many 4's? 5's? 8's? 10's?
27. In 42, how many 2's? 3's? 6's? 7's?
28. In 48, how many 4's? 6's? 8's? 12's?
29. In 60, how many 4's? 6's? 5's? 12's?
30. In 64, how many 4's? 8's? 16's? 32's?
31. In 72, how many 6's? 8's? 9's? 12's?

LESSON XXVIII.

1. The weight of a ton of coal is 2000 pounds. What would be the cost of a ton of coal at a cent a pound?
2. How many dollars are 2000 cents?
3. How many pounds in 2 tons of coal? In 3 tons? In 4 tons? In 5 tons?
4. How many pounds in $\frac{1}{2}$ of a ton of coal? In $\frac{1}{4}$ of a ton? In $\frac{1}{8}$ of a ton? In $\frac{1}{16}$ of a ton?
5. How many pounds in $1\frac{1}{2}$ tons of coal? In $2\frac{1}{2}$ tons? In $3\frac{1}{2}$ tons?
6. A load of coal weighs 3000 pounds. How much more than a ton is there in a load?
7. What is the cost of $1\frac{1}{2}$ tons of coal, at \$6 a ton? Of $3\frac{1}{2}$ tons?
8. What is the cost of $\frac{1}{2}$ of a ton of coal, at \$7 a ton?
9. If \$1.50 was paid for 500 pounds of coal, what was the price per ton?
10. In $\frac{1}{16}$ of a ton of coal how many pounds are there? In $\frac{2}{16}$? In $\frac{4}{16}$? In $\frac{8}{16}$? In $\frac{3}{16}$? In $\frac{7}{16}$?
11. In $\frac{1}{4}$ of a ton of coal how many pounds are there? In $\frac{3}{4}$? In $\frac{5}{4}$? In $\frac{7}{4}$? In $\frac{9}{4}$?
12. What is $\frac{1}{8}$ of 32? Of 320? Of 48? Of 480?
13. What is $\frac{1}{4}$ of 32? Of 320? Of 48? Of 480?
14. What is $\frac{1}{2}$ of 32? Of 320? Of 48? Of 480?
15. A mile is 320 rods. How many rods are there in $\frac{1}{8}$ of a mile? In $\frac{1}{4}$ of a mile? In $\frac{1}{2}$ of a mile?
16. A distance of 40 rods is sometimes called a furlong. A furlong is what part of a mile? How many furlongs are there in a mile?
17. $\frac{1}{8}$ of a mile is how many rods? $\frac{3}{8}$ of a mile? $\frac{5}{8}$ of a mile? $\frac{7}{8}$ of a mile? $\frac{9}{8}$ of a mile?
18. Compare $\frac{1}{2}$ of a mile with 4 furlongs.
19. Compare $\frac{1}{4}$ of a mile with 2 furlongs.

LESSON XXIX.

1. A bushel is 4 pecks. What part of a bushel is one peck? 2 pecks? 3 pecks?

2. How many pecks are there in half a bushel? A peck is what part of half a bushel?

3. How many pecks are there in a bushel and a half? A peck is what part of a bushel and a half?

4. In 11 pecks, how many bushels and pecks are there? In 15 pecks?

5. A peck is 8 quarts. What part of a peck is 2 quarts? 4 quarts? 6 quarts?

6. How many quarts of beans are there in a bushel of beans?

7. How many pecks are 2 bushels and 3 pecks?

8. How many quarts are 3 pecks and 5 quarts?

9. How many pints of cherries are there in a peck of cherries?

10. A pint is what part of a quart? Of 2 quarts? Of 3 quarts?

11. How many bushels are 32 pecks? 320 pecks? 48 pecks? 480 pecks?

12. How many pecks are 64 quarts? 72 quarts? 96 quarts? 16 quarts? 160 quarts?

13. What is the cost of 3 pecks of apples, at 25 cents a peck?

14. A grocer bought 3 bushels of potatoes at 60 cents a bushel, and sold them at 20 cents a peck. What was his profit?

15. A grocer paid 90 cents for a bushel and a half of apples, and sold them at 20 cents a peck. How much was his gain?

16. If you pay 160 cents for a bushel of hickory nuts, for what price must you sell them to gain 1 cent a quart?

LESSON XXX.

1. A quart is what part of a gallon?
2. Three quarts is what part of 2 gallons?
3. What part of a gallon is a pint? 3 pints? 5 pints?
7 pints?
4. What part of 5 gallons is 3 quarts? 5 quarts?
12 quarts?
5. What part of 3 pecks is 6 quarts? 8 quarts?
6. A 15-gallon can of water contains how many quarts?
How many pints?
7. If a family drink 6 pints of spring water a day, how
long will such a can of water last them?
8. A 15-gallon can of Silurian spring water costs \$1.50.
At that rate, how much would one gallon cost? $\frac{1}{2}$ of a
gallon? A quart?
9. A hogshead of syrup contains 63 gallons. How many
9-gallon kegs could be filled from a hogshead of syrup?
10. How many gallons are $\frac{2}{3}$ of a hogshead? $\frac{4}{5}$ of a
hogshead? $\frac{3}{4}$ of a hogshead?
11. A barrel of kerosene contains 42 gallons. How many
2-gallon cans of oil can be filled from a barrel?
12. If 25 cents is paid for a 2-gallon can of kerosene,
how many gallons can be bought for \$1?
13. What part of a barrel of kerosene is a 2-gallon can
of it?
14. When a quart of kerosene sells for 6 cents, how much
must be paid for 5 gallons?
15. When the milkman sells milk at 6 cents a quart,
which cost him 14 cents a gallon, how many gallons of milk
must he sell to make a profit of 50 cents?
16. If a little girl drinks a pint of milk each morning for
breakfast, in how many mornings does she drink 10 gal-
lons of milk?

LESSON XXXI.

1. What is the length in inches of a foot rule? Of a two-foot rule?
2. Give the length of a yardstick in feet. In inches.
3. What part of a foot is 6 inches? 4 inches? 3 inches?
4. What part of a foot is 5 inches? 7 inches? 9 inches?
5. How many feet are there in 5 yards? In 7 yards? In 50 yards? In 100 yards?
6. How many inches are there in 4 feet? In 6 feet? In 11 feet? In 12 feet?
7. How many feet are there in a rod? In 2 rods? In 4 rods? In 6 rods?
8. How many yards are there in a rod? In 2 rods? In 4 rods? In 6 rods?
9. How many feet are there in 96 inches? In 132 inches? In 144 inches?
10. How many inches in $\frac{3}{4}$ of a yard?
11. How many rods in $\frac{5}{8}$ of a mile?
12. What part of a yard is 1 foot 6 inches? 2 feet 6 inches?
13. If 3 yards of silk cost \$9, what should an additional $\frac{1}{8}$ of a yard cost?
14. How many feet are there in $\frac{3}{8}$ of 32 rods?
15. What part of 80 rods is $\frac{5}{8}$ of 32 rods?
16. What part of 72 rods is $\frac{7}{8}$ of 64 rods?
17. From a piece of cloth 36 yards long, $\frac{4}{9}$ of it was sold. How many yards remained unsold?
18. What was the relation of the yards sold to the yards unsold?
19. What was the relation of the yards unsold to the yards sold?

LESSON XXXII.

1. What is the cost of $\frac{5}{8}$ of a dozen towels, at 20 cents apiece?

2. What is the cost of $\frac{3}{4}$ of a dozen tooth brushes, at 25 cents each?

3. What is the cost of $\frac{2}{3}$ of a dozen tea plates, at 12 cents each?

4. What is the cost of $\frac{3}{5}$ of a dozen eggs, at 14 cents a dozen?

5. What is the cost of $\frac{1}{2}$ of a dozen lamps, at \$2 a lamp?

6. What is the cost of $\frac{1}{3}$ of 30 oranges, at 45 cents a dozen?

7. What is the cost of $\frac{2}{5}$ of 72 oranges, if 9 oranges cost 25 cents?

8. What is the cost of $\frac{3}{4}$ of 21 pecks of apples, when 6 pecks cost \$1.20?

9. What is the cost of $\frac{1}{4}$ of 42 lemons, at 22 cents a dozen?

10. What is $\frac{2}{3}$ of \$1.20? Of \$1.40? Of \$1.50?

11. What is $\frac{3}{4}$ of 160 pounds? Of 240 pounds?

12. What is $\frac{1}{2}$ of 28? 35? 42? 49? 56?

13. What is $\frac{3}{5}$ of 14? 21? 35? 56? 63?

14. What is $\frac{1}{3}$ of 45? 50? 60? 100? 200?

15. What is $\frac{5}{8}$ of 12? 16? 24? 36? 48?

16. What is $\frac{2}{5}$ of 24? 36? 54? 60? 72?

17. What is $\frac{3}{4}$ of 15? 25? 35? 45? 55?

18. What is $\frac{1}{3}$ of 48? 64? 72? 88? 96?

19. What is $\frac{2}{3}$ of 15? 21? 27? 36? 33?

20. What is $\frac{1}{4}$ of 45? 54? 63? 99? 108?

21. What is $\frac{3}{5}$ of 20? 30? 40? 50? 60?

22. What is $\frac{2}{11}$ of 22? 44? 66? 88? 99?

23. What is $\frac{1}{8}$ of 42? 54? 24? 66? 72?

LESSON XXXIII.

1.

How many are:

- 17 and 5 less 6?
- 27 and 6 less 5?
- 37 and 8 less 7?
- 47 and 4 less 3?
- 57 and 9 less 8?
- 67 and 5 less 7?
- 77 and 6 less 4?
- 97 and 7 less 5?

2.

How many are:

- 15 and 6 less 4?
- 25 and 8 less 6?
- 35 and 7 less 5?
- 45 and 9 less 7?
- 55 and 7 less 9?
- 65 and 8 less 5?
- 75 and 6 less 8?
- 85 and 9 less 6?

3.

How many are:

- 16 and 5 less 7?
- 26 and 4 less 12?
- 36 and 7 less 8?
- 46 and 8 less 5?
- 56 and 9 less 7?
- 66 and 6 less 11?
- 76 and 7 less 4?
- 86 and 9 less 15?

4.

How many are:

- 8 and 7 less 6?
- 18 and 6 less 5?
- 28 and 5 less 7?
- 38 and 3 less 2?
- 48 and 8 less 9?
- 58 and 9 less 8?
- 78 and 7 less 9?
- 98 and 9 less 17?

5.

How many are:

- 9 and 6 and 8 less 12?
- 9 and 7 and 9 less 11?
- 9 and 8 and 7 less 14?
- 9 and 9 and 5 less 13?
- 2 and 9 and 7 less 10?
- 3 and 9 and 8 less 7?
- 4 and 9 and 7 less 8?
- 6 and 9 and 8 less 9?

6.

How many are:

- 3 and 8 and 5 less 7?
- 5 and 8 and 7 less 9?
- 7 and 8 and 6 less 5?
- 9 and 8 and 4 less 7?
- 8 and 8 and 7 less 4?
- 6 and 8 and 9 less 7?
- 5 and 7 and 9 less 6?
- 8 and 7 and 6 less 5?

LESSON XXXIV.

1. If \$42 is the amount paid for 6 sheep, at the same rate, how much would 7 sheep cost?
2. If \$28 pays for 7 barrels of apples, how many dollars would pay for 6 barrels?
3. If 7 tons of coal cost \$35, what is the cost of 9 tons?
4. If 9 tons of coal cost \$54, what is the cost of 7 tons?
5. If 4 yards of silk cost \$14, what is the price per yard? At that rate, how much would 6 yards cost?
6. If \$10 is paid for 3 yards of carpet, at the same rate, how much would 12 yards cost?
7. How much will 4 yards of ribbon cost, if 7 yards cost 56 cents?
8. If 9 weeks' board amounts to \$63, how much would 12 weeks' board amount to?
9. How many oranges can you buy for 72 cents, at the rate of 5 oranges for 12 cents?
10. If 6 men can build a wall in 8 days, in how many days can 4 men, working as fast, build it? How long would it take 12 men to build it?
11. A man bought a chair for \$18. He paid cash to the amount of $\frac{2}{3}$ of the price; how much did he still owe?
12. The price of a lounge was \$36, and $\frac{1}{3}$ of the price was paid at the time of purchase; how much was left unpaid?
13. If $\frac{1}{2}$ of a cord of wood costs \$3.50, what is the price of a cord?
14. If $\frac{1}{5}$ of a ton of coal costs \$1.20, what is the price of a ton?
15. If 12 feet is $\frac{1}{6}$ of the length of a pole, how long is the pole?
16. If $\frac{2}{5}$ of A's money is \$9, how much is $\frac{1}{5}$ of it? $\frac{3}{5}$ of it?

LESSON XXXV.

1. If 20 geographies cost \$16, how much do 10 such geographies cost? 5 geographies? 4 geographies?
2. If 18 spoons cost \$24, what is the cost of 9 spoons? Of 6 spoons? Of 12 spoons?
3. If 8 oranges are given for 15 peaches, how many peaches should be given for 24 oranges?
4. If 48 plums are worth as much as 60 apricots, how many apricots are worth as much as 12 plums? As 24 plums? As 36 plums?
5. If a man walks 132 miles in 44 hours, how far should he be able to walk in 4 hours? In 11 hours?
6. If 9 apples cost 15 cents, how much will 3 apples cost? 6 apples? 24 apples?
7. If 7 peaches cost 10 cents, how many can you buy for 50 cents?
8. If 12 plums cost 15 cents, how much must be paid for 4 plums? For 8 plums? For 32 plums?
9. If 5 dishes cost \$3, what is the cost of 15 dishes? Of 35 dishes?
10. If 7 books cost \$5, how many books can you buy for \$60?
11. If 7 men can build 12 rods of wall in a given time, how many rods can 56 men, working as fast, build in the same time?
12. The price paid for sheep, at the rate of \$10 for 3 sheep, was \$100. How many sheep were purchased?
13. If 4 men can do a piece of work in 18 days, in how many days should 12 men be able to do the same work?
14. At the rate of 14 oranges for 35 cents, what is the cost of 2 oranges?
15. If $\frac{3}{8}$ of 24 barrels of flour cost \$54, how much should $\frac{1}{8}$ of the quantity cost?

LESSON XXXVI.

1. A farmer sold a cow for \$18, a steer for \$17, and a calf for \$7. How much did he receive for all?

2. A boy received 28 cents on Monday, 18 cents on Tuesday, and 16 cents on Wednesday. How much money did he receive?

3. In a certain orchard there were found 15 apples under the red apple tree, 13 apples under the white apple tree, 17 apples under the corner tree, and 9 apples under the early apple tree. How many apples were found in all?

4. A drover bought 9 sheep of one farmer, 17 of a second, 13 of a third, and 8 of a fourth. How many sheep did he buy altogether?

5. A grocer bought hams for \$17, oats for \$19, apples for \$15, and potatoes for \$13. How much did his purchases amount to?

6. A farmer raised 25 bushels of corn, 19 bushels of rye, and 28 bushels of oats. How many bushels of grain did he raise?

7. In an orchard there are 13 cherry trees, 14 plum trees, 7 crab-apple trees, 9 quince trees, and 45 apple trees. How many trees are there in the orchard?

8. How many days are there in the months of April, June, and November?

9. How many days are there in July and August?

10. From a piece of cloth containing 33 yards, 14 yards were cut. How many yards remained?

11. From a class of 54 pupils 6 were absent. How many pupils were present?

12. A grocer bought goods for \$39, and sold the same for \$51. What was his gain?

13. A carpenter bought lumber to the amount of \$163. He paid \$147 cash. How much did he still owe?

LESSON XXXVII.

1. At \$5 a barrel, what is the cost of 100 barrels of flour?
2. How many cents are there in \$60?
3. At \$50 a head, what is the cost of 100 head of cattle?
4. How many pounds are there in 15 tons?
5. At 50 cents a pound, what is the cost of 100 pounds of tea?
6. How many acres are there in $\frac{5}{8}$ farms of 300 acres each?
7. What is the value of 10 lots, at \$250 each?
8. What is the value of 15 shares of stock, at \$100 a share?
9. How many pounds are there in 12 bales of cotton, each weighing 300 pounds?
10. What is the cost of 500 tons of coal, at \$3 $\frac{1}{2}$ per ton?
11. What is the cost of 100 cords of wood, at \$7.50 a cord?
12. A farmer sold 1200 pounds of butter, at 12 cents a pound. How much did his sale of butter amount to?
13. The same farmer sold 100 dozen eggs, at 11 cents a dozen. How much did he receive for his eggs?
14. In 3 tons of hay, how many pounds are there?
15. In 20 hundredweight of flour, how many pounds are there?
16. How many cents are there in \$10?
17. How many pounds are there in 2 $\frac{1}{2}$ tons?
18. What is the cost of a ton of lard, at 5 cents a pound?
19. How much is 1000 pounds of wool worth, at 38 cents a pound?
20. What is the value of a ton of pork, at 11 cents a pound?

LESSON XXXVIII.

1. How long should it take 4 men to do the work that 5 men can do in 8 days?
2. How long should it take 12 men to do the work that 8 men can do in 6 days?
3. At the rate of 3 pencils for 11 cents, what is the price per dozen?
4. How many barrels of apples, worth \$3 a barrel, will pay for 7 tons of coal at \$6 a ton?
5. How many pounds of butter worth 20 cents a pound would pay a store bill of \$10?
6. If 8 barrels of flour are worth \$64, how many barrels of apples at \$3 a barrel are worth as much as 3 barrels of flour?
7. In 4800 eggs how many dozen eggs are there?
8. How many feet equal 1200 inches?
9. How many miles equal 640 rods?
10. How many yards equal 1200 feet?
11. How many hours equal 1200 minutes?
12. How many tons equal 6000 pounds?
13. How many days equal 2400 hours?
14. How many gallons equal 400 quarts?
15. How many quarts equal 2000 pints?
16. How many bushels equal 800 pecks?
17. How many pecks equal 1600 quarts?
18. How many pounds equal 1600 ounces?
19. What is $\frac{1}{8}$ of 7200 inches?
20. What is $\frac{1}{8}$ of 7200 inches?
21. What is $\frac{1}{8}$ of 7200 inches?
22. What is $\frac{1}{8}$ of 4000 pounds of coal?
23. What is $\frac{1}{4}$ of 8400 feet of boards?
24. What is $\frac{1}{2}$ of 9600 tons of ice?
25. What is $\frac{1}{3}$ of 1950 acres?

FOURTH GRADE.

FOURTH GRADE.

LESSON I.

1. A book was bought for \$.25, a slate for \$.12. How much of a half-dollar is due in change?

2. Some beef was bought for \$.32, some pork for \$.18, and mutton for \$.25. How much less than \$1 is the bill?

3. A lady bought cloth for \$12, lining for \$5, buttons for \$.50. How much change should she receive from a \$20 bill?

4. I bought apples for \$.20, oranges for \$.15, and a pineapple for \$.30. How much of a dollar is due in change?

5. Mr. A. traveled north 32 miles, south 12 miles, then north 20 miles. How far from the starting point was he?

6. Butter cost \$.45, flour \$2.30, and berries \$.25. How much less than \$5 is the bill?

7. I bought lard for \$.25, sugar for \$.30, and coffee for \$.35. How much of a \$1 bill had I left?

8. A lady bought gloves for \$1.75, ribbon for \$.50, and shoes for \$2.25. How much less than \$5 is the bill?

9. A farmer has 60 sheep. In one field he put 25, in another 15, and the rest in a third field. How many were put into the third field?

10. A man bought a watch for \$80, a chain for \$18, and a ring for \$10; he sold them for \$100. How much did he lose in the transaction?

11. A boy who had \$1 bought one book for \$.40, another book for \$.25, and a slate for \$.15. How much money did he have left?

LESSON II.

1. Take \$.50; buy butter and cheese, and return with \$.05. Tell how much each cost.

2. Take \$.75; buy sugar, veal, and coffee, and return with \$.15. Tell how much each cost.

3. Take \$1; buy beef, bread, and milk, and bring back \$.25. Tell how much each cost.

4. Take \$2; buy a necktie, a handkerchief, and 4 yards of muslin. How much did each article cost?

5. Take \$3; buy a pair of gloves, 2 yards of dress lining, and a spool of thread, bringing back \$.20. How much did each cost?

6. Take \$4; buy a pair of shoes, a yard of ribbon, and a pair of half-hose, bringing back \$.25. Give the price of each article.

7. Take \$5; buy flour, coffee, and cheese, and bring back \$.75. Tell how much was spent for each.

8. Take \$10; buy calico, an umbrella, and some ribbon, bringing back \$1.25. How much was spent for each?

9. A book was bought for \$.56. Name the coins received in change out of \$.75.

10. I bought 4 pounds of beef at 16 cents a pound. Name the coins received in change out of \$1.

11. A pair of gloves cost \$1.35. Name the coins received in change out of \$2.

12. A bill of goods amounted to \$5.65. Name the bills and coins received in change out of \$10.

13. The cost of a suit of clothes is \$13.35. If a \$20 bill is offered in payment, what coins and bills should be received in change?

14. A man's grocery bill amounted to \$26.38. What change did he receive out of \$30, which he offered in payment?

LESSON III.

1. If $\frac{1}{2}$ of 4 yards of tape costs \$.04, what is the cost of $\frac{1}{2}$ of 6 yards?
2. If 2 men can do a piece of work in 5 days, in what time can 4 men, working as fast, do it?
3. If $\frac{1}{2}$ of 4 yards of velvet costs \$4, what is the cost of $\frac{1}{2}$ of 10 yards?
4. If a man can earn $\frac{1}{2}$ of \$12 in 3 days, how much can he earn in $\frac{1}{2}$ of 12 days?
5. If 4 boys, each receiving the same amount, can earn \$8 in a week, how much less do 3 boys earn in the same time?
6. If 3 easy chairs cost \$27, at the same rate how much is the cost of 4 chairs?
7. How much do 5 hats of the same style and quality cost, if the cost of 4 such hats is \$16?
8. How many pictures, each costing the same amount, can be bought for \$30, if 4 such pictures cost \$24?
9. What is the cost of 7 tons of coal, if 5 tons cost \$25?
10. How much should be paid for riding 8 miles, if \$.35 is paid for riding 5 miles?
11. If \$.42 is the cost of 6 pounds of soap, how many pounds can be bought for \$.56?
12. If in an orchard planted in regular rows there are 45 trees in 5 rows, how many trees are there in 6 such rows?
13. How much can 7 men earn in a day, if 6 men, doing the same kind of work, can earn \$48 in the same time?
14. If 7 men can mow 49 acres of grass in one week, how many acres can 8 men, working as fast, mow in the same time?
15. If the paving of 8 feet of street costs \$56, what is the cost of paving 9 feet?

LESSON IV.

1. How much is the cost of 8 cords of wood, if 6 cords at the same rate cost \$ 48 ?

2. If $\frac{1}{2}$ of 6 tons of coal is worth \$ 30, how much, at the same rate, is 4 tons worth ?

3. How far can a man travel in 6 hours, if he can travel 32 miles in 4 hours ?

4. In how many hours can a man travel 49 miles, if he can travel 35 miles in 5 hours ?

5. If 4 boys can earn \$ 36 in one week, how much can 7 men earn in the same time ?

6. If 3 sheep can be bought for \$ 36, at the same rate how many sheep can be bought for \$ 84 ?

7. If 3 men can mow 33 acres of grass in one week, how many acres can 7 men, working as fast, mow in the same time ?

8. How many miles can a man travel in 8 hours, if he can travel 28 miles in 4 hours ?

9. If 3 men earn \$ 240 in one month, at the same rate how much can 9 men earn ?

10. How many tons of coal at \$ 6 a ton should be given in exchange for 12 barrels of flour at \$ 4 a barrel ?

11. If the cost of 5 sheep is \$ 45, how much, at the same rate, is the cost of 9 sheep ?

12. If a man saves \$ 9 a week, at the end of how many weeks will he be able to pay for 12 tons of coal at \$ 6 a ton ?

13. If a boy's wages for 6 weeks are \$ 54, in how many weeks will the wages he has received amount to \$ 72 ?

14. If a 7-acre field is rented for \$ 56, how much, at the same rate, would a 9-acre field rent for ?

15. What is the interest of a note for 7 months, if the interest for 5 months is \$ 45 ?

LESSON V.

1. At \$6 a cord, how many cords of wood may be exchanged for 4 tons of hay at \$12 a ton?
2. At \$7 a barrel, how many barrels of flour may be exchanged for 7 barrels of cider at \$8 a barrel?
3. If \$54 was paid for a certain quantity of brick at \$6 a thousand, how much must be paid for the same quantity of brick at \$7 a thousand?
4. If 8 melons are worth 56 oranges, at the same rate, how many oranges are 10 melons worth?
5. If the interest of a note for 8 months is \$64, what is the interest for 9 months?
6. If 7 barrels of pork are worth \$63, at the same rate, how much is 9 barrels worth?
7. What is the tax on 12 acres of land, if the tax on 9 acres is \$72?
8. How many rods of ditch can 11 men dig in one week, if 8 men can dig 72 rods in the same time?
9. If 9 barrels of cider are made from 81 bushels of apples, from how many bushels can 12 barrels be made?
10. If 8 girls can pick 88 quarts of strawberries in a day, how many quarts can 9 girls pick in the same time?
11. If 12 men can cut 84 acres of wheat in one day, how many men can cut 56 acres in the same time?
12. How far can a certain vessel sail in 9 hours, if it can sail 88 miles in 11 hours?
13. How many barrels of beef can be bought for \$108, if 9 barrels cost \$81?
14. If a man can travel 110 miles in 11 hours, in how many hours will he be able to travel 120 miles?
15. Among how many boys may \$1.44 be divided, if the number of cents given to each boy equals the number of boys?

LESSON VI.

1. If 3 books cost \$5, at the same rate, what is the cost of 12 books?
2. What is the cost of 4 yards of cloth, if 8 yards cost \$12?
3. If 4 barrels of flour cost \$20, at the same rate, how much is the cost of 12 barrels?
4. How far can a boy walk in 3 hours, if, at the same rate, he can walk 21 miles in 9 hours?
5. If a man can earn \$7 in 5 hours, how much, at the same rate, can he earn in 20 hours?
6. How many yards of cloth can be bought for \$5, if 12 yards can be bought for \$15?
7. If 4 yards of silk cost \$5, at the same rate, how much is the cost of 16 yards?
8. What is the cost of 5 bushels of potatoes, if 15 bushels cost \$18?
9. If 6 men can cut 7 acres of grass, how many men, in the same time and working as fast, can cut 21 acres?
10. What is the cost of 6 boxes of soap, if 24 boxes cost \$28?
11. If 5 chairs cost \$20, at the same rate, how much is the cost of 20 chairs?
12. How much is the cost of 7 books, if 28 books cost \$32?
13. If 6 opera tickets cost \$9, how much, at the same rate, is the cost of 18 tickets?
14. How much can 7 men earn in a given time, if 28 men doing similar work can earn \$36 in the time?
15. If 6 turkeys are worth \$10, what is the value of 24 turkeys, at the same rate?
16. If 4 desks of the same pattern are worth \$84, how much are 3 of the desks worth?

LESSON VII.

1. If 6 yards of cloth cost \$11, at the same rate, how many yards can be bought for \$33?
2. How many acres of grass can 7 men mow in one day, if 9 men can mow 27 acres in the same time?
3. If 7 men can earn \$8 in an hour, at the same rate, how many men can earn \$32 in an hour?
4. How many boxes of lemons are worth 9 boxes of oranges, if 32 boxes of lemons are worth 36 boxes of oranges?
5. If 3 tons of coal are worth 8 cords of wood, how many tons of coal are worth 40 cords of wood?
6. How high is a pole which casts a shadow 35 feet, if, at the same time, a staff 6 feet high casts a shadow 7 feet?
7. If 8 horses can consume 9 bushels of oats in a given time, how many horses, in the same time, can consume 45 bushels?
8. If the interest of a note for 9 months is \$30, how much is the interest of the same note for 3 months?
9. If 9 men can dig 12 cubic feet of cellar in one hour, how many men can dig 48 cubic feet of the same cellar in the same time?
10. How far can a man walk in 6 hours, if he can walk 60 miles in 18 hours?
11. If a farmer uses 12 tons of hay in 7 weeks, how many tons will he use in 28 weeks?
12. How many sheep can be bought for \$70, if they can be bought at the rate of 3 sheep for \$10?
13. If caps can be bought at the rate of 6 caps for \$9, how many caps are worth \$54?
14. How many yards of silk can be bought for \$55, if 6 yards can be bought for \$11?

LESSON VIII.

1. How much is the cost of 8 geese, if, at the same rate, 32 geese cost \$ 40 ?

2. If a pole 9 feet high casts a shadow 12 feet, how long is a pole which, at the same time, casts a shadow 36 feet ?

3. How many gallons per minute can be pumped by a pressure of 8 pounds, if 54 gallons are pumped by a pressure of 48 pounds ?

4. If 8 men can build 5 rods of stone wall in a week, how many rods of wall can be built by 56 men in the same time ?

5. What is the cost of 7 sleds, if the cost of 35 sleds is \$ 45 ?

6. If 8 men can earn \$ 9 in one hour, at the same rate, how many men can earn \$ 54 ?

7. How many acres of land can 27 men plow in a given time, if 9 men can plow 12 acres in the same time ?

8. If a man can walk 84 miles in 28 hours, how far, at the same rate, can he walk in 7 hours ?

9. How long a shadow does a man 6 feet tall cast, if a pole 48 feet in height casts a shadow of 64 feet ?

10. If a man's profits in business are \$ 12 for 3 days, in how many days will his profits amount to \$ 84 ?

11. If 6 bushels of seed produce 72 bushels of grain, at the same rate, how many bushels of grain will 9 bushels of seed produce ?

12. A furnace consumes 63 bushels of coal in 56 days. In how many days will it consume 9 bushels ?

13. If 56 turkeys are worth \$ 96, at the same rate, how much are 7 turkeys worth ?

14. What is the cost of 12 neckties, if, at the same rate, 84 neckties cost \$ 35 ?

15. How can the cost of 72 cords of wood be obtained from the cost of 12 cords ?

LESSON IX.

1. How can the cost of 2 house lots be obtained from the cost of 12 house lots, each having the same value ?

2. If the value of 9 acres of land is known, how can the cost of 4 of the acres be found ?

3. How can the amount of work done by 5 men be estimated from the amount done by 12 men ?

4. If the cost of 20 bushels of wheat is known, how can the cost of 4 bushels be obtained ?

5. How can the value of 12 tons of hay be estimated from the value of 4 tons of hay ?

6. If the value of 3 acres of land is known, how can the value of 2 of the acres be obtained ?

7. How can the weight of 4 loads of coal be obtained from the weight of 3 equal loads ?

8. If the cost of 4 head of cattle is known, how is the cost of 5 head of cattle of like value obtained ?

9. How can the weight of 7 barrels of flour be obtained from the weight of 5 barrels ?

10. If the cost of 8 sheep is known, how is the cost of 6 sheep of like value obtained ?

11. How is the value of 9 horses obtained from the cost of 7 horses of like value ?

12. If the value of 9 carriages is known, how is the value of 6 like carriages obtained ?

13. If the cost of 10 yards of cloth is known, how is the cost of 3 yards obtained ?

14. How is the value of 10 bales of cotton obtained from the cost of 9 bales ?

15. If the cost of 3 suits of clothes is known, how is the cost of 4 like suits obtained ?

16. How can the cost of 12 acres of land be obtained from the value of 5 acres ?

LESSON X.

1. If 4 men can build a wall in 3 days, in what time can 6 men build a wall of the same size ?
2. If 2 men can build a stone fence in 6 days, in how many days can 3 men build one of the same size ?
3. If 2 men can lay a water pipe in 8 days, how many men can do the same work in 4 days ?
4. In how many days will 3 horses eat as much hay as 2 horses can eat in 9 days ?
5. How many men in 6 days can do as much work as 3 men can do in 8 days ?
6. In how many days can 4 men mow a field of grass, if 3 men can mow it in 12 days ?
7. How many men can plow a piece of land in 10 days, if 5 men can do the same work in 8 days ?
8. If 4 men can build a rowboat in 12 days, in how many days can 6 men accomplish the same work ?
9. How many men in 10 days can perform the same service that 5 men can do in 12 days ?
10. In what time can 12 street cleaners earn a sum equal to what 3 men can earn in 20 hours ?
11. If 8 men can construct a piazza in 9 days, how many men should be employed to perform the same work in 6 days ?
12. In how many days can 6 men do as much work as 3 men can do in 24 days ?
13. If 5 men can plant a fruit orchard in 15 days, how many men must be employed to perform the same work in 3 days ?
14. In how many days can 10 men construct a street pavement, if 5 men can do it in 20 days ?
15. How many horses can feed upon a pasture for 12 days, if 6 horses can feed upon it for 20 days ?

LESSON XI.

1. If 3 men can build a bridge in 40 days, in what time can 6 men build it ?
2. How many men in 40 days can do as much work as 2 men can do in 80 days ?
3. In how many days can 3 men build a bridge, if 2 men can do the same work in 90 days ?
4. How many men can build a sewer in 50 days, if 20 men can do the same work in 10 days ?
5. If 6 men can build a boat in 40 days, in how many days can 8 men build it ?
6. How many men in 10 days can lay a street pavement which 5 men can lay in 50 days ?
7. In how many days can 10 men perform as much labor as 6 men can perform in 50 days ?
8. If 9 men can build a barn in 40 days, how many men can do the same work in 12 days ?
9. In how many days can 10 men perform the same amount of labor as 8 men can perform in 50 days ?
10. A water pipe can be laid by 12 men in 40 days. How many men are required to do the work in 60 days ?
11. In how many days can 12 bricklayers earn as much money as 10 bricklayers can earn in 60 days ?
12. If 9 men can build a wagon road in 80 days, how many men should be employed in order to do the same work in 60 days ?
13. A street can be paved by 8 men in 40 days. It is, however, desired to complete the work in 10 days. How many men must be employed ?
14. In how many days can 10 men build a tower which 11 men can build in 50 days ?
15. In how many days can 12 men build a wall which 10 men can build in 30 days ?

LESSON XII.

1. A merchant sold 3 yards of cloth for \$8, and gained \$2 by the transaction. What was the cost per yard?
2. A dealer sold 4 cords of wood for \$9, and thereby lost \$3. What was the cost per cord?
3. What is the cost per barrel, if 5 barrels of flour are sold for \$29, and \$4 is gained thereby?
4. If \$3 is lost by selling 6 barrels of cider for \$33, how much is the cost per barrel?
5. If 7 tons of hay were sold for \$52, and \$4 was lost thereby, what was the cost per ton?
6. If 8 sheep were sold for \$77, and \$5 was gained thereby, what was the cost per sheep?
7. What is the cost for each hog, if \$6 is gained by selling 9 hogs for \$87?
8. If 7 dozen caps are sold for \$90, and \$6 is gained thereby, what is the cost per dozen?
9. If \$5 is lost by selling $\frac{1}{2}$ dozen chairs for \$49, what is the cost per chair?
10. What is the cost per barrel, if \$8 is gained by selling 10 barrels of sugar for \$98?
11. If 10 dozen summer hats are sold for \$125, and \$5 is gained thereby, what is the cost per hat?
12. If \$9 was lost by selling 11 volumes of history for \$101, what is the cost per volume?
13. If \$12 is gained by selling 10 head of sheep for \$132, what is the cost per head?
14. What is the cost per head, if \$15 is gained by selling 12 hogs for \$159?
15. If \$20 is lost by selling 12 acres of land for \$460, what is the cost per acre?
16. Find the cost per pound, if 6 pounds of tea were sold for \$3.60, and \$.60 gained thereby.

LESSON XIII.

1. The amount paid for a suit of clothes was \$5 more than $\frac{2}{3}$ of \$24. How much was paid for the suit?

2. The amount paid for a ton of hay was \$6 less than $\frac{3}{4}$ of \$28. How much was paid for the hay?

3. The cost of a set of harness is \$6 more than $\frac{2}{3}$ of \$30. What is the cost of the harness?

4. The price of an easy chair is \$8 less than $\frac{5}{6}$ of \$36. What is the cost of the chair?

5. What is the price of an overcoat, if $\frac{4}{5}$ of \$35 is \$10 less than the price?

6. What is the cost of an acre of land, if $\frac{5}{7}$ of \$42 is \$12 less than the cost?

7. The cost of a piece of carpet is \$5 less than $\frac{3}{4}$ of \$56. What is the cost of the carpet?

8. The cost of a folding bed is \$9 less than $\frac{1}{3}$ of \$72. What is the cost of the bed?

9. Mr. B's age is 5 years more than $\frac{1}{4}$ of 56 years. How old is he?

10. The money A has in bank is \$8 more than $\frac{1}{3}$ of \$81. How much money has he in bank?

11. Mr. A. is 63 years old, and his son is $\frac{2}{3}$ as old less 10 years. How old is the son?

12. C traveled 84 miles, and D $\frac{3}{4}$ as far less 8 miles. How far did D travel?

13. A farmer planted 96 trees in one orchard and 16 trees more than $\frac{5}{12}$ as many in another. How many trees did he plant in the second orchard?

14. A's age is 12 years less than $\frac{1}{4}$ of 96 years. How old is A?

15. The cost of a man's winter coal was \$14 less than $\frac{1}{12}$ of \$144. What was the cost of the coal?

16. Find the height of a house $\frac{7}{12}$ of 60 feet high.

LESSON XIV.

1. What is the cost per ton, if $\frac{3}{4}$ of \$28 is the cost of 3 tons of coal?

2. What is the cost per yard, if $\frac{3}{8}$ of \$32 is the cost of 4 yards of silk?

3. If $\frac{3}{4}$ of \$27 is the cost of 3 head of sheep, what is the average cost per head?

4. If $\frac{4}{5}$ of \$35 is the amount Mr. B. earns in 4 days, what are his average earnings each day?

5. How far must a man walk each hour, to walk $\frac{4}{5}$ of 42 miles in 6 hours?

6. How old is George, if $\frac{5}{8}$ of 48 years is 5 times his age?

7. How much does a man earn per day, if he earns $\frac{4}{5}$ of \$56 in 8 days?

8. If 7 barrels of flour cost $\frac{5}{8}$ of \$56, what is the cost per barrel?

9. If $\frac{4}{5}$ of \$63 is the value of 9 tons of coal, how much is the coal worth per ton?

10. If $\frac{7}{8}$ of \$72 is the value of 7 pairs of shoes, how much is one pair worth?

11. If $\frac{7}{8}$ of 72 years is 8 times Robert's age, how old is he?

12. If $\frac{7}{10}$ of \$80 is the cost of 7 cords of wood, how much is a cord worth?

13. If $\frac{7}{11}$ of 88 years is 7 times Sarah's age, how old is she?

14. How much money has James in the bank, if $\frac{9}{11}$ of \$110 equals 9 times the amount?

15. At what rate per hour must a man travel to complete a distance of $\frac{7}{12}$ of 108 miles in 9 hours?

16. What is the distance from A to B, if $\frac{9}{12}$ of 144 miles is 9 times the distance?

17. If $\frac{4}{11}$ of 99 years is $1\frac{1}{2}$ times A's age, how old is he?

LESSON XV.

1. If $\frac{1}{3}$ of a pound of rice costs 4 cents, what is the cost of 3 pounds?

2. If $\frac{1}{4}$ of a ton of coal costs \$2, what is the cost of 5 tons?

3. If a man can walk 5 miles in 6 hours, how far can he walk in 72 hours?

4. How old is a boy, if 6 years is $\frac{1}{3}$ of 3 times his age?

5. How far can a train travel in 5 days, if it can run 300 miles in $\frac{1}{4}$ of a day?

6. How much can a man earn in 7 months, if he can earn \$8 in $\frac{1}{3}$ of a month?

7. What is the interest of a note for 6 months, if the interest for $\frac{1}{4}$ of a month is \$5?

8. If $\frac{1}{8}$ of an acre of land is worth \$5, what is the value of 7 acres?

9. If $\frac{1}{3}$ of a ton of hay is worth \$2, what is the value of 10 tons?

10. How many acres are there in a farm, if $\frac{1}{10}$ of the farm equals $\frac{1}{3}$ of 60 acres?

11. How old is Mr. B., if $\frac{1}{12}$ of his age equals $\frac{1}{3}$ of 15 years?

12. How far can a man travel in $\frac{1}{3}$ of a day, if he can travel 24 miles in $\frac{1}{4}$ of a day?

13. How much can a man earn in 8 days, if he can earn \$5 in $\frac{1}{4}$ of a day?

14. If $\frac{1}{3}$ of an acre of land is worth \$12, what is the value of 8 acres?

15. What is the cost of 9 watches, if $\frac{1}{4}$ of the cost of each watch is \$10?

16. What is the value of 12 horses, if $\frac{1}{10}$ of the value of each horse is \$12?

17. How old is a man, if 20 years is $\frac{1}{4}$ of 4 times his age?

LESSON XVI.

1. What is the cost of 5 pounds of rice, if $\frac{3}{4}$ of a pound costs 6 cents?

2. What is the cost of 4 tons of coal, if $\frac{3}{4}$ of a ton is worth \$6?

3. If $\frac{2}{3}$ of the cost of a journey is \$4, what is the cost of traveling 4 times as far?

4. What is the cost of 6 cords of wood, if $\frac{1}{3}$ of the cost of one cord is \$8?

5. If $\frac{3}{8}$ of the cost of a vacation trip for 1 person is \$15, how much is the cost for 7 persons?

6. What is the cost of 10 acres of land, if $\frac{1}{4}$ of the cost of one acre is \$10?

7. If $\frac{1}{8}$ of the cost of one acre of land is \$25, what is the cost of 8 acres?

8. What is the cost of 8 head of cattle, if $\frac{1}{4}$ of the cost of one head is \$60?

9. If $\frac{1}{3}$ of the cost of each horse is \$40, what is the cost of 7 horses?

10. How many acres are in 8 farms, if there are 50 acres in $\frac{1}{4}$ of each farm?

11. If $\frac{1}{3}$ of a man's monthly income is \$35, what is his income for one year?

12. What is Mr. H.'s annual income, if $\frac{1}{3}$ of his monthly salary is \$80?

13. How far can a steamer sail in 12 days, if she sails $\frac{3}{4}$ of 450 miles each day?

14. If a man's yearly expenses are $\frac{5}{12}$ of \$600, how much will he expend in 10 years?

15. How much can a man earn in 12 years, if each year he can earn $\frac{1}{12}$ of \$1200?

16. If a train travels at the rate of $\frac{1}{4}$ of 63 miles in an hour, how far can it run in 12 hours?

LESSON XVII.

1. What is $\frac{1}{2}$ of the cost of a suit of clothes, if $\frac{1}{4}$ of the cost is \$5?

2. If $\frac{1}{4}$ of the distance from B to C is 6 miles, what is $\frac{1}{2}$ of the distance?

3. If $\frac{1}{3}$ of the cost of an overcoat is \$6, what is $\frac{1}{2}$ of the cost?

4. How many years is $\frac{1}{3}$ of a man's age, if $\frac{1}{6}$ of his age is 7 years?

5. How many acres are there in $\frac{1}{3}$ of a field, if there are 9 acres in $\frac{1}{4}$ of it?

6. What is $\frac{1}{3}$ of a man's monthly expenditure, if $\frac{1}{6}$ of his expenditure is \$7?

7. If $\frac{1}{3}$ of a man's journey is 8 miles, how many miles does $\frac{1}{2}$ of his journey comprise?

8. What is $\frac{1}{3}$ of a merchant's daily profits, if $\frac{1}{4}$ of the profits is \$10?

9. What is $\frac{1}{3}$ of the cost of a dress suit, if $\frac{1}{6}$ of the cost is \$7?

10. How many years is $\frac{1}{3}$ of Mr. Smith's age, if $\frac{1}{6}$ of his age is 9 years?

11. What is $\frac{1}{3}$ of the annual interest of a note, if $\frac{1}{6}$ of the interest is \$12?

12. If $\frac{1}{12}$ of a man's land equals 7 acres, how many acres are there in $\frac{1}{6}$ of his farm?

13. If 12 sheep are $\frac{1}{3}$ of the number of sheep in a field, how many sheep are there in $\frac{1}{2}$ of the herd?

14. If 12 men form $\frac{1}{10}$ of a company of militia, how many men equal $\frac{1}{2}$ of the company?

15. How much is $\frac{1}{12}$ of a man's yearly salary, if $\frac{1}{11}$ of the salary is \$1320?

16. Find the interest of a note for 6 months, if $\frac{1}{3}$ of the interest for 5 months is \$40.

LESSON XVIII.

1. If $\frac{1}{3}$ of a cord of wood costs \$3, what is the cost of $\frac{2}{3}$ of a cord?

2. What is the cost of $\frac{3}{4}$ of a ton of hay, if $\frac{1}{4}$ of a ton cost \$3?

3. How much can a man earn in $\frac{1}{2}$ of a day, if he can earn \$5 in $\frac{3}{4}$ of a day?

4. If $\frac{1}{3}$ of a street can be paved in 6 days, in how many days can $\frac{2}{3}$ of it be repaired?

5. In how many days can $\frac{5}{8}$ of a piece of work be done, if $\frac{1}{4}$ of it can be done in 7 days?

6. What is the cost of $\frac{3}{4}$ of a pound of tea, if $\frac{1}{4}$ of a pound costs \$.08?

7. If $\frac{2}{3}$ of a journey can be traveled in 5 days, in how many days can $\frac{5}{6}$ of it be traveled?

8. What is the value of $\frac{1}{3}$ of an acre of land, if $\frac{2}{3}$ of it is worth \$35?

9. In how many days can $\frac{3}{8}$ of a piece of work be done, if $\frac{1}{4}$ of it can be done in 14 days?

10. If $\frac{1}{3}$ of the area of a grass plot equals 84 square yards, what is the area of $\frac{2}{3}$ of it?

11. In how many days can $\frac{5}{8}$ of a field be plowed, if $\frac{1}{4}$ of it can be plowed in 7 days?

12. If $\frac{3}{10}$ of the distance from A to B is 11 miles, what is $\frac{7}{10}$ of the distance?

13. If $\frac{3}{11}$ of the value of a hogshhead of sugar is \$48, what is $\frac{8}{11}$ of the value?

14. In how many days can $\frac{1}{11}$ of a water pipe be laid, if $\frac{2}{11}$ of it can be laid in 45 days?

15. If $\frac{1}{2}$ of the price of a field is \$20, what is $\frac{3}{2}$ of the price of it?

16. How many square rods are there in $\frac{3}{2}$ of a field, if $\frac{2}{3}$ of its area is 36 square rods?

LESSON XIX.

1. What is the cost of $\frac{3}{4}$ of a cord of wood, if $\frac{1}{2}$ of a cord is worth \$3?

2. If $\frac{1}{3}$ of the cost of a pair of shoes is \$4, what is $\frac{2}{3}$ of the cost?

3. How far is $\frac{4}{5}$ of the distance from E to F, if $\frac{1}{5}$ of the distance is 5 miles?

4. How many years is $\frac{3}{4}$ of Clarence's age, if $\frac{1}{4}$ of his age is 4 years?

5. If $\frac{1}{4}$ of a man's weekly earnings is \$4, how much is $\frac{3}{4}$ of his earnings?

6. What is the value of $\frac{5}{8}$ of a field of grass, if $\frac{1}{8}$ of it is worth \$8?

7. If $\frac{1}{8}$ of an acre of land is worth \$8, what is the cost of $\frac{7}{8}$ of an acre?

8. How far can a man travel in $\frac{5}{8}$ of a day, if he can travel 7 miles in $\frac{1}{8}$ of a day?

9. If $\frac{1}{4}$ of an hour equals 12 minutes, how many minutes do $\frac{7}{12}$ of an hour equal?

10. Find $\frac{7}{8}$ of the area of the floor of a schoolroom, if $\frac{1}{8}$ of the area is 8 square yards?

11. How many feet are there in $\frac{8}{9}$ of the height of a flagstaff, if $\frac{1}{9}$ of the height is 9 feet?

12. If $\frac{1}{4}$ of the height of a tree is 12 feet, how many feet are there in $\frac{3}{4}$ of the height?

13. If $\frac{1}{3}$ of a man's monthly savings are \$12, how much is $\frac{2}{3}$ of his earnings?

14. In how many days can $\frac{2}{11}$ of a piece of work be done, if $\frac{1}{11}$ of it can be done in 11 days?

15. How many pounds are $\frac{1}{11}$ of John's weight, if $\frac{1}{11}$ of his weight is 12 pounds?

16. In what time can $\frac{1}{6}$ of a piece of work be done, if $\frac{1}{6}$ of it can be done in 6 days?

LESSON XX.

1. What is the value of one ton of coal, if $\frac{3}{4}$ of a ton is worth \$4?

2. If $\frac{3}{4}$ of a pound of butter costs \$.18, find the price per pound?

3. How far can a man travel in one day, if he can travel 480 miles in $\frac{3}{4}$ of a day?

4. If $\frac{4}{5}$ of the cost of a boy's vacation trip is \$20, what is the cost of the trip.

5. What is the value of a watch and chain, if $\frac{2}{3}$ of the value is \$25?

6. If $\frac{4}{5}$ of a merchant's profits for one day were \$28, what were his profits for the day?

7. What is the cost of a journey from Chicago to New York, if \$18 is $\frac{3}{4}$ of the cost?

SUGGESTION. — The cost equals $\frac{4}{3}$ of \$42. Prove.

8. In how many days can a bridge be built, if $\frac{3}{4}$ of it can be built in 40 days?

SUGGESTION. — The bridge can be built in $\frac{4}{3}$ of 40 days. Prove.

9. How many bushels of oats can be raised on one acre, if 56 bushels can be raised on $\frac{7}{8}$ of an acre?

10. If $\frac{2}{3}$ of the cost of a suit of clothes is \$35, what is the cost of the suit?

11. What are a man's monthly savings, if $\frac{3}{4}$ of what he saves is \$56?

12. How many feet high is a flagstaff, if 63 feet equal $\frac{7}{11}$ of the height?

13. What is the interest of a note for one year, if \$72 is the interest for $\frac{7}{11}$ of a year?

14. How much can a man earn in one month, if he can earn \$108 in $\frac{9}{12}$ of a month?

LESSON XXI.

1. If $\frac{2}{3}$ of a quart of oil costs \$.08, what is 1 quart of oil worth?

2. How far can a man travel by rail in $\frac{1}{3}$ of a day, if he can travel 360 miles in $\frac{2}{3}$ of a day?

3. If $\frac{3}{4}$ of a dozen oranges cost \$.18, how much is the cost of $\frac{1}{4}$ of a dozen?

4. What is the income of a man for $\frac{1}{4}$ of a day, if his income for $\frac{3}{8}$ of a day is \$20?

5. If $\frac{5}{8}$ of a stone wall can be built in 30 days, in how many days can $\frac{1}{4}$ of the same wall be built?

6. A boy paid $\frac{1}{3}$ of his money for a coat. What was the cost of it, if $\frac{2}{3}$ of his money was \$36?

SUGGESTION. — Prove that the cost of the coat was $\frac{1}{3}$ of $\frac{2}{3}$ of \$36.

7. What is the value of $\frac{1}{4}$ of an acre of land, if $\frac{5}{8}$ of an acre costs \$30?

SUGGESTION. — $\frac{1}{4}$ of an acre costs $\frac{1}{4}$ of $\frac{5}{8}$ of \$30.

8. If $\frac{7}{8}$ of a man's taxes for this year are \$42, how much is $\frac{1}{8}$ of his taxes?

9. What is $\frac{1}{12}$ of the value of a quantity of corn, if $\frac{5}{8}$ of the value is \$64?

10. If $\frac{9}{10}$ of the value of a sofa is \$63, what is $\frac{1}{10}$ of the value?

11. What is $\frac{1}{8}$ the yield of a field of wheat, if $\frac{9}{12}$ of the yield is 72 bushels?

12. What is $\frac{1}{3}$ of the cost of building a wall, if $\frac{2}{12}$ of the cost is \$81?

13. If $\frac{8}{11}$ of a piece of work can be done in 64 days, in how many days can $\frac{1}{11}$ of the work be done? In what time can $\frac{1}{2}$ of the work be done?

14. How much is $\frac{1}{10}$ of the cost of building a rowboat, if $\frac{8}{10}$ of the cost is \$80?

LESSON XXII.

1. If $\frac{3}{4}$ of the cost of a dress is \$8, what is $\frac{1}{4}$ of the cost of it?

2. How many hours are in $\frac{3}{4}$ of a day, if there are 18 hours in $\frac{1}{4}$ of a day?

3. What is $\frac{3}{4}$ of the cost of a suit of clothes, if $\frac{1}{4}$ of the cost is \$16?

4. What is $\frac{3}{4}$ the cost of a quantity of linen if $\frac{1}{4}$ of the cost is \$20?

5. How many miles is $\frac{3}{4}$ of the distance from A to B, if $\frac{1}{4}$ of the distance is 24 miles?

6. How much is $\frac{3}{4}$ of the proceeds of a sale of flour, if $\frac{1}{4}$ of the proceeds is \$28?

7. If $\frac{3}{4}$ of the value of a load of wheat is \$36, what is $\frac{1}{4}$ of the value of the wheat?

8. How far can a man travel by rail in $\frac{3}{4}$ of a day, if he travels 400 miles in $\frac{1}{4}$ of a day?

9. If 45 acres is one half of the area of a tract of land, how many acres are there in $\frac{3}{4}$ of the tract?

10. What amount will cover $\frac{3}{4}$ of a merchant's daily profits, if $\frac{1}{4}$ of his profits are \$56?

11. How many pounds are $\frac{3}{4}$ of a boy's weight, if $\frac{1}{4}$ of his weight is 56 pounds?

12. If $\frac{3}{4}$ of a man's monthly expenses are \$80, what are $\frac{1}{4}$ of his expenses?

13. If $\frac{3}{4}$ of a grocer's sale of flour for one day equals \$99, how much does $\frac{1}{4}$ of the sale amount to?

14. What is $\frac{3}{4}$ of a man's monthly income, if $\frac{1}{4}$ of his income is \$110?

15. If $\frac{3}{4}$ of the money Mr. B. has in bank is \$120, how much is $\frac{1}{4}$ of it?

16. If $\frac{3}{4}$ of the distance from B to C is 121 miles, how many miles are $\frac{1}{4}$ of the distance?

LESSON XXIII.

1. 5 cents and 5 mills equal how many mills? 9 cents and 8 mills?
2. 48 mills equal how many cents? 56 mills? 72 mills?
3. 4 dimes and 8 cents equal how many cents? 8 dimes and 5 cents?
4. 36 cents equal how many dimes? 65 cents? 88 cents?
5. \$1 and 1 dime equal how many dimes? \$2 and 2 dimes? \$5 and 5 dimes? \$8 and 6 dimes?
6. 12 dimes equal how many dollars? 25 dimes? 56 dimes? 75 dimes? 88 dimes? 100 dimes?
7. \$1 and 10 cents equal how many cents? \$2 and 20 cents? \$6 and 25 cents? \$12 and 56 cents?
8. 135 cents equal how many dollars? 250 cents? 375 cents? 560 cents? 725 cents? 984 cents?
9. What is the relation of 5 mills to 20 mills? To 8 cents?

SUGGESTION.—5 mills equal $\frac{1}{4}$ of 20 mills. 5 mills equal $\frac{1}{8}$ of 8 cents.

10. What is the relation of 10 cents to 50 mills? To 40 mills? Of 6 dimes to 70 cents? To 30 cents?
11. What is the relation of 9 cents to 5 dimes? To 9 dimes? Of \$1 to 5 dimes? To 4 dimes? To 3 dimes?
12. What is the relation of $\$ \frac{3}{8}$ to $\$ \frac{3}{4}$? Of $\$ \frac{1}{2}$ to 8 dimes?
13. How much greater or less than 80 cents is $\$ \frac{3}{4}$? Is $\$ \frac{1}{2}$?
14. How much greater or less than \$2.50 are 20 dimes? Are \$1.50?
15. How much greater or less than 8 dimes are \$1.20? Are \$1.50?
16. $\$ \frac{3}{8}$ are how much greater or less than $\$ \frac{3}{4}$? Than $\$ \frac{1}{2}$?
17. \$3 and 4 dimes are how much greater or less than \$4 and 5 dimes?

LESSON XXIV.

1. 5 feet 4 inches equal how many inches? 7 feet 6 inches?
2. 87 inches equal how many feet? 102 inches? 150 inches?
3. 9 yards 2 feet equal how many feet? 12 yards 1 foot?
4. 25 feet equal how many yards? 38 feet? 62 feet?
5. 1 rod 3 yards equal how many yards? 2 rods 4 yards?
6. 1 rod 4 feet equal how many feet? 2 rods 7 feet?
7. 1 mi. 20 rods equal how many rods? $\frac{1}{2}$ mi. 40 rods?
 $\frac{1}{4}$ mi. 20 rods? $\frac{3}{4}$ mi. less 40 rods?
8. $\frac{1}{8}$ mile 50 rods equal how many rods? $\frac{3}{8}$ mile 30 rods?
9. $\frac{1}{10}$ mi. less 12 rods equals how many rods? $\frac{5}{10}$ mile less 60 rods?
10. $\frac{3}{8}$ of a foot equals $\frac{3}{8}$ of how many inches more than one foot?
11. $\frac{3}{4}$ of a foot equals $\frac{3}{8}$ of how many inches more than one foot?
12. $\frac{3}{8}$ of a mile equals how much more than 100 rods? Than $\frac{1}{4}$ of a mile?
13. What is the relation of 3 feet 4 inches to 1 foot 8 inches?
14. What is the relation of 2 feet 6 inches to 6 feet 8 inches?
15. What is the relation of 2 yards 2 feet to 11 yards 2 feet?
16. What is the relation of 12 yards to 6 yards 2 feet? To 3 yards 1 foot?
17. What is the relation of $\frac{1}{8}$ of a foot to $\frac{1}{2}$ of a foot? Of $\frac{3}{8}$ of a foot to $\frac{3}{4}$ of a foot? To $\frac{1}{2}$ of a foot?
18. What is the relation of 8 feet to 4 yards? Of 9 feet?

LESSON XXV.

1. 4 qt. 1 pt. equal how many pints? 8 qt. 1 pt.?
2. 13 pt. equal how many quarts? 19 pt. ? 25 pt. ?
3. 3 qt. equal $\frac{1}{2}$ of how many pints? 5 qt. ? 6 qt. ?
4. 6 pt. equal $\frac{1}{4}$ of how many quarts? 10 pt. ? 12 pt. ?
5. 4 pt. equal $\frac{1}{8}$ of how many quarts? $\frac{1}{4}$? $\frac{1}{2}$? $\frac{3}{4}$?
6. 5 pk. 5 qt. equal how many quarts? 12 pk. 4 qt. ?
7. 29 qt. equal how many pecks? 47 qt. ? 75 qt. ?
8. 6 qt. equal $\frac{1}{4}$ of how many pecks? 10 qt. ? 12 qt. ?
9. 9 qt. equal $\frac{3}{8}$ of how many pecks? 12 qt. ? 18 qt. ?
10. 12 qt. equal $\frac{3}{4}$ of how many pecks? $\frac{3}{8}$? $\frac{4}{8}$? $\frac{6}{8}$?
11. 5 bu. 2 pk. equal how many pecks? 8 bu. 3 pk. ?
12. 15 pk. equal how many bushels? 27 pk. ? 50 pk. ?
13. 6 pk. equal $\frac{1}{4}$ of how many bushels? 8 pk. ? 12 pk. ?
14. 8 pk. equal $\frac{1}{5}$ of how many bushels? 9 pk. ? 12 pk. ?
15. 12 pk. equal $\frac{3}{4}$ of how many bushels? $\frac{3}{8}$? $\frac{4}{8}$? $\frac{5}{8}$?
16. 6 bu. equal 3 times how many pecks? 9 bu. ?
17. 6 pk. equal 12 times how many quarts? 9 pk. ?
18. What is the relation of 3 pt. to 3 qt. ? To 6 qt. ?
19. What is the relation of 4 qt. to 2 pt. ? Of 6 qt. ?
20. What is the relation of 2 qt. 1 pt. to 5 qt. 1 pt. ?
21. What is the relation of 3 qt. to 1 pk. ? To 3 pk. ?
22. What is the relation of 1 pk. 1 qt. to 4 pk. 4 qt. ?
23. What is the relation of $\frac{1}{2}$ pk. to 2 pk. 2 qt. ? Of $\frac{1}{8}$ pk. ?
24. What is the relation of $\frac{1}{3}$ of 3 pk. 3 qt. to 4 pk. 4 qt. ?
25. What is the relation of $\frac{1}{5}$ of 5 pk. to $\frac{1}{3}$ of 7 pk. 4 qt. ?
26. What is the relation of 5 pk. to 5 bu. ? To 10 bu. ?
27. What is the relation of 2 bu. 1 pk. to 6 bu. 3 pk. ?
28. What is the relation of 7 bu. 2 pk. to 12 bu. 2 pk. ?
29. What is the relation of $\frac{1}{3}$ of 5 bu. 1 pk. to 3 bu. 2 pk. ?
30. What is the relation of $\frac{1}{3}$ of 6 bu. to $\frac{1}{4}$ of 12 bu. 2 pk. ?

LESSON XXVI.

1. 5 quarts 1 pint equal how many pints? 12 quarts 1 pint?

2. 15 pints equal how many quarts? 19 pints?

3. 4 pints equal $\frac{1}{2}$ of how many quarts? 8 pints?

4. 6 quarts equal 4 times how many pints? 10 quarts?

5. 6 pints equal $\frac{3}{4}$ of how many quarts? 9 pints?

6. 3 gallons 2 quarts equal how many quarts? 6 gallons 3 quarts?

7. 18 quarts equal how many gallons? 27 quarts?

8. 5 quarts equal $\frac{1}{2}$ of how many gallons? 9 quarts?

9. 7 gallons equal 7 times how many quarts? 3 times how many quarts? 4 times how many quarts?

10. 10 quarts equal $\frac{2}{3}$ of how many gallons? $\frac{5}{7}$? $\frac{3}{4}$? $\frac{5}{12}$?

11. How much greater or less than 5 gallons 1 quart are 7 gallons 2 quarts? Than 9 gallons 3 quarts are 12 gallons 2 quarts?

12. One hogshead equals 63 gallons. $\frac{1}{3}$ of a hogshead equals how many gallons?

13. How much greater or less than $\frac{3}{4}$ of a hogshead is $\frac{1}{2}$ of a hogshead?

14. How much greater or less than 50 gallons is $\frac{5}{7}$ of a hogshead? Than $\frac{2}{3}$ of a hogshead is 24 gallons?

15. What is the relation of 3 quarts 1 pint to 10 quarts 1 pint? Of 2 gallons 1 quart to 6 gallons 3 quarts?

16. What is the relation of 1 hogshead to 7 gallons? To 9 gallons? Of $\frac{1}{2}$ of a hogshead to $\frac{1}{3}$ of a hogshead? Of $\frac{1}{3}$ of a hogshead to $\frac{1}{4}$ of a hogshead?

17. What is the relation of 1 gallon 3 quarts to 8 gallons 3 quarts? Of 12 gallons 2 quarts to 2 gallons 2 quarts?

18. What is the relation of 6 gallons to $\frac{1}{2}$ of a hogshead? Of $\frac{3}{4}$ of a hogshead to 8 gallons? Of 9 gallons to $\frac{5}{7}$ of a hogshead?

LESSON XXVII.

1. 2 pounds 8 ounces equal how many ounces ? 3 pounds 10 ounces ?
2. 64 ounces equal how many pounds ? 40 ounces ?
3. What is the relation of $\frac{1}{2}$ of a pound to $\frac{3}{4}$ of a pound ?
4. How much greater or less than $\frac{5}{8}$ of a pound is $\frac{1}{2}$ of a pound ?
5. 1 cental 50 pounds equal how many pounds ? 2 centals 60 pounds ? 8 centals 25 pounds ?
6. 550 pounds equal how many centals ? 1055 pounds ?

What is the relation of:

7. $\frac{1}{2}$ of a cental to $\frac{1}{3}$ of a cental ? $\frac{3}{4}$ of a cental to 25 pounds ?
8. $\frac{3}{10}$ of a cental to $\frac{1}{2}$ of a cental ? 50 pounds to $2\frac{1}{2}$ centals ?
9. $\frac{1}{2}$ of a cental to 2 centals ? 3 centals to $\frac{3}{10}$ of a cental ?

How much greater or less :

10. Than $\frac{1}{2}$ of a cental is $\frac{3}{4}$ of a cental ?
11. Than $3\frac{1}{2}$ centals is 400 pounds ?
12. Than $5\frac{1}{2}$ centals is 775 pounds ?
13. Than $10\frac{1}{4}$ centals is 950 pounds ?
14. 2 tons 5 centals equal how many centals ? How many pounds ?
15. 4 tons 8 centals equal how many centals ? How many pounds ?

What is the relation of:

16. $\frac{3}{4}$ of a ton to 6 centals ?
17. 5 centals to $\frac{3}{4}$ of a ton ?
18. $\frac{7}{10}$ of a ton to 7 centals ?
19. 4 centals to $\frac{1}{4}$ of a ton ?
20. 4 tons to 10 centals ?
21. $2\frac{1}{2}$ centals to $\frac{1}{2}$ of a ton ?

LESSON XXVIII.

1. $\frac{3}{4}$ of a minute equals how many seconds? $\frac{5}{12}$ of a minute?
2. What is the relation of $\frac{1}{12}$ of a minute to $\frac{3}{4}$ of a minute?
3. How much greater or less than 45 seconds is $\frac{4}{5}$ of a minute?
4. $\frac{2}{3}$ of an hour equals how many minutes? $\frac{7}{12}$ of an hour?
5. What is the relation of $\frac{4}{5}$ of an hour to 8 minutes?
6. How much greater or less than 40 minutes is $\frac{3}{5}$ of an hour?
7. What is the relation of $\frac{1}{3}$ of a day to 16 hours? Of $\frac{3}{8}$ of a day to $\frac{3}{4}$ of a day? Of $\frac{1}{4}$ of a day to $\frac{1}{2}$ of a day?
8. How much greater or less than $\frac{5}{8}$ of a day is $\frac{2}{3}$ of a day? Than 60 hours is 2 days 2 hours?
9. What is the relation of 5 hours to $\frac{5}{8}$ of a day? Of 10 hours to 2 days 2 hours?
10. 3 days 3 hours equal how many hours?
11. $\frac{1}{2}$ of a day equals $\frac{1}{6}$ of how many days? $\frac{1}{3}$ of a day?
12. 5 weeks 4 days equal how many days? 9 weeks 3 days?
13. 32 days equal how many weeks? 47 days? 90 days?
14. What is the relation of 1 week 5 days to 5 weeks 1 day? Of 8 weeks 4 days to 2 weeks 6 days?
15. 4 months 3 weeks equal how many weeks?
16. 5 years 5 months equal how many months?
17. 90 months equal how many years? 125 months?
18. 8 months equal $\frac{1}{3}$ of how many years? $\frac{1}{6}$ of how many years?
19. 4 years equal 8 times how many months?
20. What is the relation of $\frac{1}{10}$ of a century to $\frac{3}{8}$ of a century? Of $\frac{4}{5}$ of a century to 10 years?

LESSON XXIX.

1. $\frac{1}{12}$ sq. ft. equals how many square inches? $\frac{1}{12}$ sq. ft.?
2. What is the relation of 5 sq. in. to $\frac{1}{12}$ sq. ft.? Of 12 sq. in. to $\frac{1}{12}$ sq. ft.?
3. How much greater or less than 100 sq. in. is $\frac{1}{12}$ sq. ft.?
4. 5 sq. yd. 4 sq. ft. equal how many square feet? 4 square yards 5 square feet?
5. 12 sq. ft. equal $\frac{1}{8}$ of how many square yards? $\frac{1}{8}$ of how many?
6. 8 sq. yd. equal 6 times how many square feet? 9 times how many?
7. 60 sq. ft. equal how many square yards? 84 sq. ft.?
8. What is the relation of 5 sq. yd. to 5 sq. ft.? Of 6 sq. yd. 2 sq. ft. to 8 sq. ft.? Of 7 sq. ft. to 9 sq. yd. 3 sq. ft.?
9. One acre equals 160 square rods. $\frac{3}{4}$ A. equals how many square rods?
10. $\frac{1}{2}$ A. and $\frac{3}{4}$ A. equal how many square rods?
11. How much greater or less is $\frac{3}{8}$ A. than $\frac{1}{4}$ A.?
12. What is the relation of $\frac{5}{8}$ A. to $\frac{3}{4}$ A.? Of 2 A. of land to $\frac{1}{4}$ A.? Of $\frac{3}{4}$ A. of land to 10 A.?
13. What is the relation of 40 sq. rd. to $\frac{1}{2}$ A.?
14. 80 square rods equal $\frac{1}{4}$ of how many acres? 120 square rods? What is the relation of 90 sq. rd. to $\frac{1}{4}$ A.?
15. One square mile equals 640 A.; $\frac{1}{8}$ sq. mi. equals how many acres?
16. How much greater or less than 200 acres is $\frac{3}{8}$ sq. mi.?
17. What is the relation of 80 A. to $\frac{1}{4}$ sq. mi.? Of $\frac{1}{8}$ sq. mi. to 200 A.? Of $\frac{1}{16}$ sq. mi. to a field of 8 A.?
18. What is the relation of a farm of 80 A. to $\frac{1}{8}$ sq. mi.?
19. What is the relation of 80 A. to a section (*square mile*) of land?
20. What is the relation of a section of land to 64 A.?

LESSON XXX.

1. A square inch is a square 1 inch long. Hence from the nature of a square it is 1 inch wide.
2. What is a square foot? What are 2 sq. ft.?
3. What is a square yard? What are 5 sq. yd.?
4. What is a square rod? What are 10 sq. rd.?
5. What is a square mile? What are 20 sq. mi.?
6. How wide is a square inch? A square foot? A square yard? A square rod? A square mile? Why?
7. What is the distance around (*the perimeter of*) a square inch? Around a square foot? Around a square yard? Around a square rod? Around a square mile?
8. A 3-inch square is a square 3 in. long. How wide is it?
9. What is a 5-foot square? A 10-yard square? A 20-rod square?
10. What is a 50-mile square? How wide is it? Why?
11. What is the perimeter of a 12-yard square? Of a 20-rod square? Of a 40-mile square?
12. How may 2 sq. in. of paper be arranged to make the perimeter 6 in.? How may they be arranged to make the perimeter 8 in.?
13. How may 3 sq. ft. of board be arranged to make the perimeter 8 ft.? How may they be arranged to make the perimeter 36 ft.?
14. How may 5 square yards of anything be arranged to make the perimeter 12 yd.? How may they be arranged to make the perimeter 100 yd.?
15. What is the relation of the length of a square mile to its perimeter? Of the length of a $\frac{1}{2}$ mile square to its perimeter?
16. What is the relation of the perimeter of any square to its length?

LESSON XXXI.

1. Find the area of a picture 8 in. long and 6 in. wide.

ANALYSIS. — By the definition of a square inch, the area of a surface 1 in. long and 1 in. wide is 1 sq. in.; the area of a surface 8 in. long and 1 in. wide is 8 sq. in.; and the area of a surface 8 in. long and 6 in. wide is 48 sq. in.

2. What is the area of a paper 7 in. long and 5 in. wide?
3. What is the area of a door 12 ft. long and 4 ft. wide?
4. What is the area of a floor 6 yd. long and 5 yd. wide?
5. What is the area of a lot 12 rd. long and 10 rd. wide?
6. What is the area of a strip of land 20 mi. long and 15 mi. wide?

7. The area of a room 12 yd. long is 108 sq. yd. How wide is it?

SUGGESTION. — The area of a room 12 yd. long and 1 yd. wide is 12 sq. yd. A room whose area is 108 sq. yd. is as many yards wide as 12 sq. yd. are contained times in 108 sq. yd., or 9 yd.

8. If the area of one surface of a slate is 80 sq. in., and its width is 8 in., how long is it?

9. Find the area of a floor 9 yd. long and 8 yd. wide.

10. Find the area of a lot 10 rd. long and 6 rd. wide.

11. The area of a tract of land 5 mi. long is 20 sq. mi. How wide is it?

12. The area of a blackboard 12 ft. long is 48 sq. ft. How wide is it?

13. What is the area of a 3-inch square?

SUGGESTION. — A 3-inch square is a square 3 inches long and 3 inches wide.

14. What is the area of a 5-foot square? Of a 12-foot square? Of a 7-yard square? Of a 9-rod square?

15. What is the area of an 8-mile square? Of a 20-mile square?

16. What is the area of a strip of land 10 mi. long and $\frac{1}{2}$ mi. wide?

LESSON XXXII.

1. How many cubic feet equal 1 cubic yard 8 cubic feet ?
2 cubic yards 2 cubic feet ?

2. How many cubic feet equal $\frac{1}{8}$ of a cubic yard ? $\frac{3}{8}$ of a cubic yard ?

3. How many cubic feet equal $\frac{3}{8}$ of a cubic yard ? $\frac{5}{8}$ of a cubic yard ?

4. How much less than $\frac{7}{8}$ of a cubic yard is $\frac{4}{8}$ of a cubic yard ?

5. How much greater than $\frac{5}{8}$ of a cubic yard is $\frac{7}{8}$ of a cubic yard ?

6. What is the relation of $\frac{1}{8}$ of a cubic yard to $\frac{3}{8}$ of a cubic yard ?

7. What is the relation of $\frac{3}{8}$ of a cubic yard to 10 cubic feet ?

8. What is the relation of 15 cubic feet to $\frac{7}{8}$ of a cubic yard ?

9. What is the relation of $\frac{3}{8}$ of a cubic yard to $\frac{5}{8}$ of a cubic yard ?

10. If one cord equals 8 cord feet, how many cord feet equal 5 cords 5 cord feet ?

11. How many cord feet equal 9 cords and 7 cord feet ?
12 cords 4 cord feet ?

12. How many cords equal 29 cord feet ? 54 cord feet ?
101 cord feet ?

13. What is the relation of 6 cord feet to $1\frac{1}{2}$ cords ? To $2\frac{1}{2}$ cords ?

14. What is the relation of 9 cord feet to $2\frac{1}{4}$ cords ? To $3\frac{3}{4}$ cords ?

15. What is the relation of 3 cords to 6 cord feet ? To 15 cord feet ?

16. What is the relation of $4\frac{1}{2}$ cords to $1\frac{1}{2}$ cords ? To 24 cord feet ?

LESSON XXXIII.

1. What is the relation of $4\frac{1}{2}$ cords to $7\frac{1}{2}$ cords? To 72 cord feet?
2. What is the relation of $6\frac{1}{4}$ cords to $3\frac{1}{8}$ cords? To $3\frac{1}{4}$ cords?
3. What is the relation of $7\frac{1}{2}$ cords to 10 cords? To $12\frac{1}{2}$ cords?
4. If one cord equals 128 cubic feet, how many cubic feet equal 1 cord 12 cubic feet?
5. How many cubic feet equal $\frac{1}{4}$ of a cord? $\frac{1}{8}$ of a cord?
6. What is the relation of $\frac{1}{4}$ of a cord to 8 cubic feet? Of $\frac{1}{8}$ of a cord?
7. What is the relation of 4 cubic feet to $\frac{1}{8}$ of a cord? To $\frac{3}{8}$ of a cord?
8. What is the relation of $\frac{3}{8}$ of a cord to 12 cubic feet? To 17 cubic feet?
9. What is the relation of $\frac{3}{8}$ of a cord to $\frac{3}{4}$ of a cord? To $\frac{1}{8}$ of a cord?
10. If 1 cord foot equals 16 cubic feet, $\frac{5}{8}$ of a cord foot equals how many cubic feet?
11. How much greater or less than $\frac{3}{4}$ cord feet is $\frac{7}{8}$ cord feet?
12. What is the relation of $\frac{3}{8}$ of a cord foot to 32 cubic feet? To 44 cubic feet?
13. What is the relation of $\frac{1}{4}$ of a cord foot to 2 cord feet? To 2 cords?
14. What is the relation of 9 cubic feet to 2 cubic yards? To 5 cubic yards?
15. What is the relation of 3 cord feet to a cubic yard? To a cubic foot?
16. What is the relation of a cubic yard to a cord foot? To 3 cord feet?

LESSON XXXIV.

1. What is the relation of a square inch to a surface 4 inches long and 3 inches wide ?

2. What is the relation of a surface 3 feet long and 2 feet wide to a square foot ?

3. What is the relation of a ceiling 12 feet long and 10 feet wide to 60 square feet ?

4. What is the length of a floor whose area is 96 square yards, and whose width is 8 yards ?

5. What is the relation of 2 square feet to a 2-foot square ?

6. What is the relation of 5 square rods to a 5-rod square ?

7. What is the relation of a space 4 rods square to one 2 rods square ?

8. If a piece of land 3 rods square is worth \$36, how much is 3 square rods worth ?

9. At \$.12 a square inch, what is the cost of gilding a binding 4 inches long and 3 inches wide ?

10. At \$3 a square rod, what is the cost of a piece of land 15 rods wide and 20 rods long ?

11. At \$.09 a square yard, what is the cost of plastering a ceiling 8 yards long and 5 yards wide ?

12. At \$1 a rod, what is the cost of fencing a field 12 rods long and 10 rods wide ?

13. At \$3 a square yard, what is the cost of decorating a ceiling 12 feet long and 6 feet wide ?

14. What is the cost of digging a ditch around a square field 12 rods long at \$.25 a yard ?

15. At \$2 a square yard, what is the cost of carpet sufficient to cover a floor 12 feet long and 9 feet wide ?

16. At \$100 an acre, what is the value of a lot 10 rods long and 8 rods wide ?

LESSON XXXV.

1. A cubic inch is a cube one inch long. Hence, from the nature of a cube, it is also one inch wide and one inch high.

2. What is a cubic foot? How wide is it? How high is it?

3. What is a cubic yard? How wide is it? How high is it?

4. Describe 2 cubic inches. 5 cubic feet. 10 cubic yards. 15 cubic inches.

5. Describe a 3-inch cube. An 8-foot cube. A 12-yard cube.

6. What is the distance around one of the faces of a 5-inch cube?

7. What is the area of one of the faces of a 7-inch cube? Of a 9-inch cube?

8. What is the area of all the faces of a 10-inch cube? Of a 6-inch cube?

9. What is the relation of the area of a 5-inch cube to the area of a 10-inch cube?

NOTE.—The space occupied by a solid is called its volume, and its dimensions are length, breadth, and thickness (depth or height).

10. What is the volume of a block 4 inches long, 3 inches wide, and 2 inches thick?

ANALYSIS.—By the definition of a cubic inch, the volume of a solid 1 inch long, 1 inch wide, and 1 inch thick is 1 cubic inch; the volume of a solid 4 inches long, 1 inch wide, and 1 inch thick is 4 cubic inches; the volume of a solid 4 inches long, 3 inches wide, and 1 inch thick is 12 cubic inches; and the volume of a solid 4 inches long, 3 inches wide, and 2 inches thick is 24 cubic inches.

11. What is the volume of a solid 5 inches long, 4 inches wide, and 3 inches thick?

12. What is the volume of a cellar 6 yards long, 5 yards wide, and 3 yards deep?

LESSON XXXVI.

1. How high is a room whose volume is 160 cubic yards, and whose length is 8 yards and width 5 yards ?

SUGGESTION. — The height of the room is as many yards as the volume of a room 8 yards long, 5 yards wide, and 1 yard high is contained times in a room whose volume is 160 cubic yards.

2. What is the relation of 4 cord feet of wood to a pile of wood 8 feet long, 4 feet wide, and 4 feet high ?

3. What is the height of a pile of wood, whose volume is 200 cubic feet, and whose length is 8 feet and width 5 feet ?

4. At \$.20 a cubic yard, what is the value of the earth taken from a cellar 5 yards long, 4 yards wide, and 3 yards deep ?

5. At \$.10 a cubic foot, what is the cost of building a wall 100 feet long, 5 feet high, and 2 feet wide ?

6. What is the relation of a cube 2 inches long to a 3-inch cube ?

7. What is the relation of a pile of wood 32 feet long, 4 feet wide, and 4 feet high, to a pile 8 feet long, 4 feet wide, and 4 feet high ?

8. If a cord of wood is 8 feet long, 4 feet wide, and 4 feet high, how many cords are in a pile 8 feet long, 8 feet wide, and 4 feet high ? Why ?

9. If one cubic foot equals $\frac{1}{4}$ of a bushel, how many bushels of wheat can be put into a bin 10 feet long, 5 feet wide, and 4 feet deep ?

10. At \$1 a bushel, what will be the cost of wheat sufficient to fill a bin 5 feet long, 4 feet wide, and 3 feet deep ?

11. If a cubic inch of gold metal is worth \$40, what is the value of a 2-inch cube of the same metal ?

12. What is the volume of a pile of wood 12 feet long, 5 feet wide, and 4 feet high ?

LESSON XXXVII.

1. What is meant by $\frac{1}{2}$ of a quantity ?

SUGGESTION. — By $\frac{1}{2}$ of a quantity is meant one of the two equal parts of it. Illustrate.

2. What is meant by $\frac{1}{3}$ of a quantity ? By $\frac{2}{3}$ of a quantity ?

SUGGESTION. — By $\frac{2}{3}$ of a quantity is meant two of the three equal parts of it. Or the expression $\frac{2}{3}$ may be taken to mean one of the three equal parts of a quantity twice as large. Illustrate.

3. What is understood by $\frac{1}{4}$ of a quantity ? By $\frac{3}{4}$ of it ?
 4. What is understood by $\frac{2}{5}$ of a quantity ? By $\frac{3}{5}$ of it ?
 5. What is understood by $\frac{1}{6}$ of a quantity ? By $\frac{5}{6}$ of it ?
 6. What is understood by $\frac{2}{7}$ of a quantity ? By $\frac{5}{7}$ of it ?
 7. What is understood by $\frac{3}{8}$ of a quantity ? By $\frac{5}{8}$ of it ?
 8. What is understood by $\frac{4}{9}$ of a quantity ? By $\frac{5}{9}$ of it ?
 9. What is understood by $\frac{3}{10}$ of a quantity ? By $\frac{7}{10}$ of it ?
 10. What is understood by $\frac{5}{11}$ of a quantity ? By $\frac{6}{11}$ of it ?
 11. What is understood by $\frac{7}{12}$ of a quantity ? By $\frac{5}{12}$ of it ?
 12. What is understood by $\frac{1}{2}$ of 12 minutes ? By $\frac{1}{3}$ of 9 hours ?
 13. What is understood by $\frac{2}{3}$ of 15 ounces ? By $\frac{1}{4}$ of 20 days ?
 14. What is understood by $\frac{4}{5}$ of 30 months ? By $\frac{5}{6}$ of 42 miles ?
 15. What is understood by $\frac{3}{4}$ of 49 acres ? By $\frac{5}{6}$ of 48 years ?
 16. What is understood by $\frac{5}{6}$ of 54 dollars ? By $\frac{7}{10}$ of 60 chairs ?
 17. What is understood by $\frac{7}{11}$ of 77 gallons ?
 18. How is the value of $\frac{1}{2}$ of a quantity obtained ?

NOTE. — The value of $\frac{1}{2}$ of a quantity is obtained by dividing the quantity into two equal parts, and measuring or counting the value of each part.

LESSON XXXVIII.

1. 1 equals how many halves? $1\frac{1}{2}$ equals how many halves?
2. 2 equals how many halves? $4\frac{1}{2}$ equals how many halves?
3. $7\frac{1}{2}$ equals how many halves? $7\frac{1}{2}$ equals how many $\frac{3}{4}$?
4. $8\frac{1}{2}$ equals how many halves? $10\frac{1}{2}$ equals how many $\frac{3}{4}$?
5. 12 equals how many $\frac{3}{4}$? $12\frac{1}{2}$ equals how many $\frac{3}{4}$?
6. 1 equals how many thirds? 2 equals how many $\frac{2}{3}$?
7. How many $\frac{2}{3}$ equal $3\frac{1}{3}$? How many $\frac{2}{3}$ equal $4\frac{2}{3}$?
8. How many $\frac{2}{3}$ equal $5\frac{1}{3}$? How many $\frac{4}{3}$ equal $6\frac{2}{3}$?
9. How many $\frac{4}{3}$ equal $9\frac{1}{3}$? How many $\frac{4}{3}$ equal $10\frac{2}{3}$?
10. What is the relation of $\frac{4}{3}$ to $11\frac{2}{3}$? Of $\frac{8}{3}$ to 12?
11. How many 4ths equal $1\frac{1}{4}$? How many $\frac{3}{4}$ equal $2\frac{1}{4}$?
12. How many $\frac{5}{4}$ equal $3\frac{3}{4}$? How many $\frac{5}{4}$ equal $6\frac{3}{4}$?
13. How many $\frac{3}{4}$ equal $8\frac{1}{4}$? How many $\frac{5}{4}$ equal $8\frac{3}{4}$?
14. What is the relation of $\frac{1}{4}$ to $9\frac{1}{4}$? Of $\frac{3}{4}$ to $10\frac{3}{4}$?
15. What is the relation of $11\frac{1}{4}$ to $\frac{3}{4}$? Of $12\frac{1}{4}$ to $\frac{1}{4}$?
16. How many $\frac{4}{5}$ equal $1\frac{3}{5}$? How many $\frac{7}{5}$ equal $2\frac{3}{5}$?
17. How many $\frac{3}{5}$ equal $4\frac{3}{5}$? How many $\frac{3}{5}$ equal $5\frac{3}{5}$?
18. How many $\frac{3}{5}$ equal $6\frac{3}{5}$? How many $\frac{4}{5}$ equal $7\frac{1}{5}$?
19. What is the relation of $\frac{3}{5}$ to $8\frac{3}{5}$? Of $\frac{4}{5}$ to $9\frac{3}{5}$?
20. What is the relation of $\frac{7}{5}$ to $11\frac{1}{5}$? Of $\frac{8}{5}$ to $12\frac{3}{5}$?
21. How many $\frac{3}{5}$ equal $1\frac{3}{5}$? How many $\frac{4}{5}$ equal $2\frac{3}{5}$?
22. How many $\frac{4}{5}$ equal $4\frac{4}{5}$? How many $\frac{5}{5}$ equal $5\frac{4}{5}$?
23. How many $\frac{5}{5}$ equal $6\frac{4}{5}$? How many $\frac{4}{5}$ equal $7\frac{4}{5}$?
24. What is the relation of $8\frac{1}{5}$ to $\frac{7}{5}$? Of $9\frac{1}{5}$ to $\frac{5}{5}$?
25. What is the relation of $10\frac{1}{5}$ to $\frac{3}{5}$? Of $\frac{7}{5}$ to $12\frac{4}{5}$?
26. $1\frac{1}{7}$ equals how many $\frac{2}{7}$? $2\frac{2}{7}$ equals how many $\frac{4}{7}$?
27. How many $\frac{4}{7}$ equal $3\frac{4}{7}$? How many $\frac{5}{7}$ equal $4\frac{4}{7}$?
28. How many $\frac{4}{7}$ equal $5\frac{4}{7}$? $5\frac{4}{7}$ equal how many $\frac{5}{7}$?
29. What is the relation of $6\frac{4}{7}$ to $\frac{4}{7}$? Of $7\frac{4}{7}$ to $\frac{3}{7}$?
30. What is the relation of $10\frac{4}{7}$ to $\frac{3}{7}$? Of $\frac{3}{7}$ to $12\frac{4}{7}$?

LESSON XXXIX.

1. How many $\frac{3}{8}$ equal $1\frac{1}{4}$? How many $\frac{7}{8}$ equal $2\frac{5}{8}$?
2. How many $\frac{3}{8}$ equal $4\frac{3}{8}$? How many $\frac{3}{8}$ equal $5\frac{3}{8}$?
3. What is the relation of $7\frac{4}{8}$ to $\frac{5}{8}$? To $\frac{3}{8}$? To $1\frac{1}{2}$?
4. What is the relation of $\frac{5}{8}$ to 9? Of $\frac{3}{8}$? Of $1\frac{1}{2}$?
5. What is the relation of $\frac{3}{8}$ to $10\frac{1}{4}$? Of $1\frac{1}{2}$ to $11\frac{3}{8}$?
6. What is the relation of $\frac{3}{8}$ to 12? Of 12 to $1\frac{1}{2}$?
7. How many $\frac{7}{8}$ equal $1\frac{3}{8}$? How many $\frac{7}{8}$ equal $2\frac{3}{8}$?
8. How many $\frac{3}{8}$ equal $3\frac{5}{8}$? How many $\frac{5}{8}$ equal $4\frac{3}{8}$?
9. How many $\frac{5}{8}$ equal $5\frac{5}{8}$? How many $\frac{7}{8}$ equal $6\frac{3}{8}$?
10. What is the relation of 7 to $\frac{7}{8}$? Of $7\frac{3}{8}$ to $1\frac{1}{8}$?
11. What is the relation of $\frac{3}{8}$ to $8\frac{3}{8}$? Of $1\frac{1}{2}$ to $11\frac{1}{2}$?
12. What is the relation of $10\frac{3}{8}$ to $\frac{3}{8}$? Of $12\frac{3}{8}$ to $1\frac{1}{8}$?
13. How many $\frac{7}{10}$ equal $1\frac{4}{10}$? How many $\frac{7}{10}$ equal $2\frac{7}{10}$?
14. How many $\frac{9}{10}$ equal $3\frac{9}{10}$? How many $\frac{9}{10}$ equal $4\frac{8}{10}$?
15. How many $\frac{7}{10}$ equal $5\frac{4}{10}$? How many $\frac{9}{10}$ equal $6\frac{4}{10}$?
16. What is the relation of $7\frac{7}{10}$ to $\frac{7}{10}$? Of $8\frac{1}{10}$ to $\frac{9}{10}$?
17. What is the relation of $\frac{6}{10}$ to $5\frac{6}{10}$? Of $\frac{9}{10}$ to $8\frac{1}{10}$?
18. What is the relation of $9\frac{6}{10}$ to $\frac{8}{10}$? Of $\frac{9}{10}$ to $10\frac{8}{10}$?
19. How many $\frac{8}{11}$ equal $1\frac{5}{11}$? How many $\frac{9}{11}$ equal $2\frac{5}{11}$?
20. How many $\frac{6}{11}$ equal $3\frac{7}{11}$? How many $\frac{7}{11}$ equal $4\frac{6}{11}$?
21. How many $\frac{8}{11}$ equal $5\frac{9}{11}$? How many $\frac{9}{11}$ equal $6\frac{8}{11}$?
22. What is the relation of $\frac{8}{11}$ to $7\frac{8}{11}$? Of $1\frac{1}{11}$ to $8\frac{8}{11}$?
23. What is the relation of $\frac{9}{11}$ to $9\frac{9}{11}$? Of $1\frac{1}{11}$ to $10\frac{10}{11}$?
24. What is the relation of $1\frac{1}{11}$ to $8\frac{8}{11}$? Of $1\frac{1}{11}$ to $9\frac{9}{11}$?
25. How many $\frac{5}{12}$ equal $1\frac{8}{12}$? How many $1\frac{1}{12}$ equal $2\frac{5}{12}$?
26. How many $\frac{9}{12}$ equal $3\frac{9}{12}$? How many $\frac{9}{12}$ equal $4\frac{8}{12}$?
27. How many $\frac{7}{12}$ equal $5\frac{3}{12}$? How many $1\frac{1}{12}$ equal $6\frac{5}{12}$?
28. What is the relation of $7\frac{4}{12}$ to $\frac{8}{12}$? Of 8 to $\frac{8}{12}$?
29. What is the relation of $1\frac{1}{12}$ to $8\frac{4}{12}$? Of $\frac{9}{12}$ to $8\frac{8}{12}$?
30. What is the relation of $9\frac{2}{12}$ to $1\frac{1}{12}$? Of $10\frac{5}{12}$ to $1\frac{1}{12}$?
31. What is the relation of $1\frac{1}{12}$ to 10? Of $10\frac{5}{12}$ to $\frac{9}{12}$?
32. What is the relation of $11\frac{8}{12}$ to $\frac{9}{12}$? Of $12\frac{8}{12}$ to $1\frac{1}{12}$?

LESSON XL.

1. 1 equals how many fourths? $\frac{1}{2}$ equals how many fourths?

2. How many fourths equal $\frac{1}{2}$ and $\frac{1}{4}$? How many fourths equal $\frac{1}{2}$ less $\frac{1}{4}$?

3. $\frac{1}{2}$ and $\frac{2}{4}$ equal how many fourths? $\frac{1}{2}$ less $\frac{2}{4}$ equals how many fourths?

4. 1 equals how many sixths? $\frac{1}{2}$ equals how many sixths? $\frac{1}{3}$ equals how many sixths?

5. $\frac{1}{2}$ and $\frac{1}{3}$ equal how many sixths? $\frac{1}{2}$ less $\frac{1}{3}$ equals how many sixths?

6. $\frac{1}{2}$ and $\frac{2}{3}$ equal how many sixths? $\frac{2}{3}$ less $\frac{1}{2}$ equals how many sixths?

7. $\frac{1}{3}$ and $\frac{5}{6}$ equal how many sixths? $\frac{5}{6}$ less $\frac{1}{3}$ equals how many sixths?

8. 1 equals how many eighths? $\frac{1}{2}$ equals how many eighths? $\frac{1}{4}$? $\frac{3}{4}$?

9. $\frac{1}{2}$ and $\frac{3}{4}$ equal how many eighths? $\frac{1}{2}$ less $\frac{3}{4}$ equals how many eighths?

10. $\frac{1}{4}$ and $\frac{3}{4}$ equal how many eighths? $\frac{3}{4}$ less $\frac{5}{8}$ equals how many eighths?

11. 1 equals how many ninths? $\frac{1}{3}$ equals how many ninths? $\frac{2}{3}$ equals how many ninths?

12. $\frac{1}{3}$ and $\frac{2}{3}$ equal how many ninths? How many ninths equal $\frac{2}{3}$ less $\frac{1}{3}$?

13. 1 equals how many tenths? $\frac{1}{2}$? $\frac{1}{5}$? $\frac{2}{5}$?

14. $\frac{1}{2}$ and $\frac{3}{10}$ equal how many tenths? $\frac{3}{10}$ less $\frac{1}{2}$ equals how many tenths?

15. $\frac{2}{5}$ and $\frac{3}{10}$ equal how many tenths? $\frac{3}{10}$ less $\frac{2}{5}$ equals how many tenths?

16. $\frac{1}{2}$ and $\frac{1}{5}$ equal how many tenths? $\frac{1}{2}$ less $\frac{2}{5}$ equal how many tenths?

17. How many tenths equal $\frac{1}{2}$ and $\frac{2}{5}$? How many tenths equal $\frac{1}{2}$ less $\frac{1}{5}$?

LESSON XLI.

1. 1 equals how many twelfths? $\frac{1}{2}$ equals how many twelfths? $\frac{1}{3}$? $\frac{1}{4}$?

2. $\frac{1}{2}$ and $\frac{5}{12}$ equal how many twelfths? $\frac{9}{12}$ less $\frac{1}{2}$ equals how many twelfths?

3. $\frac{1}{3}$ and $\frac{7}{12}$ equal how many twelfths? $\frac{11}{12}$ less $\frac{2}{3}$ equals how many twelfths?

4. $\frac{1}{4}$ and $\frac{5}{12}$ equal how many twelfths? How many twelfths equal $\frac{3}{4}$ less $\frac{5}{12}$?

5. How many twelfths equal $\frac{1}{3}$ and $\frac{1}{4}$? How many twelfths equal $\frac{3}{4}$ less $\frac{1}{3}$?

6. How many twelfths equal $\frac{2}{3}$ and $\frac{3}{4}$? How many twelfths equal $\frac{3}{4}$ less $\frac{2}{3}$?

7. How many twelfths equal $\frac{1}{4}$ and $\frac{1}{6}$? How many twelfths equal $\frac{3}{4}$ less $\frac{1}{6}$?

8. How many twelfths equal $\frac{3}{4}$ and $\frac{5}{6}$? How many twelfths equal $\frac{5}{6}$ less $\frac{3}{4}$?

9. $\frac{1}{2}$ equals how many fourteenths? $\frac{1}{4}$ equals how many fourteenths? $\frac{2}{7}$? $\frac{5}{7}$?

10. $\frac{1}{2}$ and $\frac{1}{4}$ equal how many fourteenths? $\frac{1}{2}$ less $\frac{3}{7}$ equals how many fourteenths?

11. $\frac{1}{3}$ equals how many fifteenths? $\frac{1}{6}$ equals how many fifteenths? $\frac{2}{3}$? $\frac{4}{5}$?

12. $\frac{1}{3}$ and $\frac{2}{3}$ equal how many fifteenths? $\frac{4}{5}$ less $\frac{1}{3}$ equals how many fifteenths?

13. How many fifteenths equal $\frac{2}{3}$ and $\frac{3}{5}$? How many fifteenths equal $\frac{4}{5}$ less $\frac{2}{3}$?

14. How many $\frac{1}{4}$ equal $3\frac{3}{4}$? How many $\frac{5}{7}$ equal $4\frac{2}{7}$?

15. How many $\frac{1}{4}$ equal $5\frac{5}{7}$? $5\frac{5}{7}$ equal how many $\frac{5}{7}$?

16. What is the relation of $6\frac{5}{7}$ to $\frac{1}{4}$? Of $7\frac{5}{7}$ to $\frac{1}{4}$?

17. What is the relation of $10\frac{2}{7}$ to $\frac{1}{4}$? Of $\frac{3}{7}$ to $12\frac{5}{7}$?

18. What is the relation of $12\frac{3}{7}$ to $\frac{1}{4}$? Of $\frac{1}{4}$ to $12\frac{3}{7}$? Of $\frac{3}{7}$ to $12\frac{3}{7}$?

LESSON XLII.

- 1.
- $\frac{2}{3}$
- equals how many 1's ?

ANALYSIS. — Since $\frac{2}{3}$ equals 1, $\frac{1}{3}$, which equals two $\frac{1}{3}$'s equals two 1's.

- 2.
- $\frac{5}{2}$
- equals how many 1's ?
- $\frac{8}{3}$
- equals how many 1's ?
-
- $\frac{10}{2}$
- ?

- 3.
- $\frac{12}{2}$
- equals how many 1's ?
- $\frac{20}{2}$
- equals how many 1's ?
-
- $\frac{24}{2}$
- ?

- 4.
- $\frac{6}{3}$
- equals how many 1's ?
- $\frac{12}{3}$
- equals how many 1's ?
-
- $\frac{18}{3}$
- ?

- 5.
- $\frac{18}{3}$
- equals how many 1's ?
- $\frac{20}{3}$
- equals how many 1's ?
-
- $\frac{24}{3}$
- equals how many 2's ?

- 6.
- $\frac{25}{3}$
- equals how many 1's ?
- $\frac{27}{3}$
- equals how many 3's ?
-
- $\frac{36}{3}$
- equals how many 4's ?

- 7.
- $\frac{8}{4}$
- equals how many 1's ?
- $\frac{12}{4}$
- equals how many 3's ?
-
- $\frac{20}{4}$
- ?

- 8.
- $\frac{24}{4}$
- equals how many 2's ?
- $\frac{22}{4}$
- equals how many 1's ?
-
- $\frac{36}{4}$
- equals how many 3's ?

- 9.
- $\frac{40}{4}$
- equals how many 5's ?
- $\frac{42}{4}$
- equals how many 1's ?
-
- $\frac{44}{4}$
- equals how many 4's ?

NOTE. — An integer is an expression of undivided units, as 3. A mixed number is an expression for an undivided and a divided unit, as $2\frac{1}{2}$.

10. What mixed number equals
- $\frac{8}{3}$
- ? What integer equals
- $\frac{15}{3}$
- ?

11. What integer equals
- $\frac{20}{5}$
- ? What mixed number equals
- $\frac{28}{5}$
- ?

12. What mixed number equals
- $\frac{42}{3}$
- ? What integer equals
- $\frac{60}{3}$
- ?

- 13.
- $\frac{12}{6}$
- equals what integer ?
- $\frac{28}{6}$
- equals what mixed number ?

- 14.
- $\frac{24}{6}$
- equals how many 2's ?
- $\frac{36}{6}$
- equals how many 3's ?

15. What mixed number equals
- $\frac{47}{8}$
- ? What integer equals
- $\frac{54}{8}$
- ?

LESSON XLIII.

1. A gentleman paid $\$ \frac{1}{2}$ for a melon, and $\$ \frac{1}{3}$ for a pineapple. How much did he pay for both?

2. A farmer bought $\frac{1}{2}$ of an acre of land, and sold $\frac{1}{3}$ of an acre. How much of the acre did he have left?

3. Mr. A. earned $\$ \frac{3}{4}$ in one hour, and $\$ \frac{1}{2}$ the next. How much did he earn in both hours?

SUGGESTION. — Let the answer be expressed as a mixed number.

4. A farmer sold $\frac{1}{3}$ of an acre of land to one man, and $\frac{1}{4}$ of an acre to another. How much was sold to both?

5. A dealer delivered $\frac{3}{4}$ of a ton of coal yesterday, and $\frac{1}{4}$ of a ton to-day. How much coal was delivered in both days?

6. If a bushel of wheat is worth $\$ \frac{3}{4}$, and a bushel of corn $\$ \frac{2}{3}$, how much less is the corn worth than the wheat?

7. If $\frac{1}{2}$ of B's money is $\$ 5$ more than $\frac{1}{3}$ of it, how much money has he?

8. If A travels $\frac{1}{3}$ of a mile in one direction, and B $\frac{1}{2}$ of a mile in the opposite direction, how far apart will they be?

9. C earns $\$ \frac{5}{8}$ a day, and D earns $\$ \frac{3}{4}$ a day. How much do both earn in a day?

10. If one boy travels $\frac{1}{2}$ of a mile, and another boy $\frac{1}{3}$ of a mile in the same direction, how far apart will they be?

11. A man earns $\$ 2\frac{3}{4}$ a day, and a boy $\$ 1\frac{1}{4}$ a day. How much do both earn in a day?

12. A man gave $\frac{2}{3}$ of his estate to his son, and $\frac{1}{3}$ of it to his daughter. How much more did the son receive than the daughter?

13. A boy paid $\frac{3}{4}$ of his money for a suit, and $\frac{1}{4}$ of it for a hat. What part of his money had he left?

14. Mr. A. worked $2\frac{1}{2}$ hours yesterday, and $1\frac{5}{8}$ hours the day before. How many hours did he work both days?

15. A gentleman paid $\$ 25\frac{1}{4}$ for a suit, and $\$ 5\frac{1}{2}$ for a pair of shoes. How much was paid for both?

LESSON XLIV.

1. What is the cost of 4 yards of cloth, if one yard costs $\$ \frac{2}{3}$?

2. If a man can earn $\$ \frac{3}{4}$ a day, in how many days can he earn $\$ 2\frac{1}{4}$?

3. What is the cost of one basket of fruit, if 5 baskets cost $\$ 6\frac{1}{2}$?

4. If 3 men can do $\frac{3}{12}$ of a piece of work in one day, how much of it can 4 men do in the same time?

5. If 4 men can earn $\$ 5\frac{1}{2}$ in a day, how much can 5 men earn at the same rate in the same time?

6. How many bushels of wheat can be bought for $\$ 8\frac{1}{2}$, if one bushel can be bought for $\$ \frac{1}{2}$?

7. If a man can earn $\$ 6\frac{2}{3}$ in 4 days, in how many days can he earn $\$ 13\frac{1}{3}$?

8. If 7 boxes of fruit cost $\$ 9\frac{1}{2}$, how much, at the same rate, is the cost of 12 boxes?

9. How much is the cost of 8 yards of velvet, if 6 yards cost $\$ 4\frac{1}{2}$?

10. If 4 men can complete a piece of work in $1\frac{1}{2}$ days, in what time could 9 men complete it?

11. If 8 men can build a fence in $\frac{3}{4}$ day, how many men should be employed to complete it in 3 days?

12. How much can 12 men dig in one day, if in the same time 3 men can dig $\frac{3}{11}$ of a rod of ditch?

13. If $\frac{1}{2}$ of a yard of cloth costs $\$ \frac{2}{3}$, how much, at the same rate, is $\frac{1}{3}$ of a yard worth?

14. What is the cost of $\frac{1}{2}$ of a basket of fruit, if $\frac{3}{4}$ of a basket costs $\$ \frac{1}{2}$?

15. If $\frac{2}{3}$ of a barrel of flour costs $\$ 3\frac{1}{2}$, how much is $\frac{5}{8}$ of the barrel worth?

16. If one man can build $\frac{4}{5}$ of a shed in 2 days, how much of the shed can he build in 3 days?

LESSON XLV.

1. If A can do a piece of work in 2 days, how much of the work can he do in 1 day ?

2. If B can mow a field of grass in 3 days, how much of the field can he mow in 1 day ?

3. C can dig a ditch in 2 days, and B can do the same work in 4 days. How much of the ditch can each dig in 1 day ?

4. If one man can build a wall in 3 days, and another man in 4 days, how much of the wall can each man build in 1 day ?

5. One man can lay a water pipe in 2 days, and another man in 5 days. How much of the pipe can each lay in 1 day ?

6. Mr. A. can reap a field of grain in 2 days, and Mr. B. can reap it in 3 days. How much of the field can both reap in 1 day ?

7. How much of the wood can both men cut in one day, if one man can cut it all in 2 days and the other in 4 days ?

8. If one man can plow a field in 3 days, and another man in 4 days, how much of the field can both men plow in 1 day ?

9. G can do a piece of work in 4 days, and H in 5 days. In how many days can both do the work ?

ANALYSIS. — Since G can do a piece of work in 4 days, in 1 day he can do $\frac{1}{4}$ of the work, and since H can do the work in 5 days, in 1 day he can do $\frac{1}{5}$ of the work, and both of them in 1 day can do $\frac{1}{4}$ and $\frac{1}{5}$, which equals $\frac{9}{20}$, of the work ; and they can do $\frac{20}{9}$, or the piece of work, in as many days as there are $\frac{9}{20}$ in $\frac{20}{9}$, or the work, which equals $2\frac{2}{9}$ days.

10. John can mow a field of grass in 2 days, and James can mow it in 3 days. In how many days can both mow the field ?

LESSON XLVI.

1. If A can build a wall in 2 days, and B in 3 days, how much more of the wall can A build in one day than B?

2. If C can mow a field of grass in 3 days, and D in 4 days, how much less of the field can D mow in one day than C?

3. If a man and a boy together can dig a trench in 2 days, and the boy can dig it in 5 days, how much can the man dig in one day?

4. James and John together can dig a cistern in 3 days. James can dig it alone in 5 days. How much of the cistern can John dig in one day?

5. E and F can do a piece of work in 4 days. E can do it in 6 days. How much more can both do in one day than E can do alone?

6. A and B can reap a field of grain in 4 days, and A can reap it alone in 6 days. In how many days can B alone reap the grain?

ANALYSIS. — Since A and B can reap a field of grass in 4 days, they can reap $\frac{1}{4}$ of it in 1 day; and since A can reap it in 6 days, he can reap $\frac{1}{6}$ of it in 1 day and B can reap $\frac{1}{6}$ of it less $\frac{1}{6}$ of it, which equals $\frac{1}{12}$ of it, in 1 day, and he can reap the field in as many days as there are $\frac{1}{12}$ in $\frac{1}{12}$, or the whole work, which equals 12 days.

7. G and H can repair a roof in 2 days; G can do the work in 3 days. In how many days can H repair it?

8. A man and a boy can paint a house in 3 days. The man can do it alone in 4 days. In how many days can the boy paint it?

9. Two men can earn a certain sum of money in 3 days. One of them can earn the sum in 5 days. In what time can the other earn it?

10. In 4 days B and C can do a piece of work which C can do in 5 days. In how many days can B do the work?

LESSON XLVII.

1. What mixed number equals $\frac{45}{10}$? What integer equals $\frac{70}{10}$?
2. What integer equals $\frac{88}{11}$? What mixed number equals $\frac{105}{11}$?
3. $\frac{60}{12}$ equals how many 1's? $\frac{84}{12}$ equals how many 1's?
4. $\frac{96}{12}$ equals what integer? $\frac{144}{12}$ equals what mixed number?
5. $\frac{21}{3}$ equals how many 1's? $\frac{42}{3}$ equals how many 3's?
6. What integer equals $\frac{42}{3}$? What mixed number equals $\frac{40}{3}$?
7. How many 3's equal $\frac{33}{3}$? What mixed number equals $\frac{20}{3}$?
8. What mixed number equals $\frac{18}{8}$? What integer equals $\frac{24}{8}$?
9. What is the relation of 5 inches to 2 feet? Of 9 inches to 2 feet?
10. What is the relation of 9 inches to 3 feet? Of 4 inches to 3 feet?
11. What is the relation of 40 inches to 1 foot 8 inches? To 2 feet 6 inches?
12. What is the relation of $\frac{1}{2}$ mi. to $\frac{3}{4}$ mi.? To $\frac{3}{8}$ mi.?
13. What is the relation of $\frac{1}{4}$ mi. to $\frac{3}{8}$ mi.? To $\frac{5}{8}$ mi.?
14. How is the value of $\frac{1}{8}$ of a quantity obtained? Of $\frac{3}{8}$ of it?
15. How is the value of $\frac{1}{4}$ of a quantity obtained? Of $\frac{3}{4}$ of it?
16. How is the value of $\frac{1}{6}$ of a quantity obtained? Of $\frac{5}{6}$ of it?
17. How is the value of $\frac{2}{7}$ of a quantity obtained? Of $\frac{7}{8}$ of it?
18. How is the value of $\frac{7}{8}$ of a quantity obtained? Of $\frac{9}{10}$ of it?

LESSON XLVIII.

1. Mr. A. can cut a field of grain in 2 days, and his son can do it in 5 days. In how many days can both cut it?
2. B can earn a sum of money in 2 days, and C in 7 days. In how many days can both men earn it?
3. In 8 days, a boy can do a piece of work which his father and he can do in 3 days. In what time can the father do it?
4. In 4 days, 2 men do a piece of work, which one of them can do in 5 days. In what time can the other do it?
5. In 5 days a man and his son can build a fence which the man can build in 6 days. In what time can the son build it?
6. At \$1000 an acre, what is the value of a field 20 rods long and 8 rods wide?
7. What is the relation of a 2-inch cube to a prism 4 inches long, 3 inches wide, and 2 inches thick?
8. At \$2 a square foot, what is the cost of gilding the surface of a 3-foot cube?
9. A cubic foot equals about $7\frac{1}{2}$ gallons. How many gallons of water can be put into a tank 10 feet long, 5 feet wide, and 2 feet deep?
10. At \$.50 a bushel, what is the value of grain sufficient to fill a bin 12 feet long, 5 feet wide, and 4 feet deep?
11. At \$3 a gallon, what is the value of oil sufficient to fill a hollow cube 2 feet long?
12. At \$5 a ton, what is the value of 50000 pounds of coal?
13. How many gallons of water can be put into a tank 12 feet long, 5 feet wide, and 3 feet deep?
14. If 2 men can do a piece of work in 6 days, and one of them alone can do it in 4 days, in what time can the other do it alone?

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